CDX-T70MX

SERVICE MANUAL

Ver 1.1 2004.03

US Model
AEP Model
E Model

Model Name Using Similar Mechanism	CDX-T68X
CD Drive Mechanism Type	MG-276A-159
Optical Pick-up Name	KSS-720A

SPECIFICATIONS

System	Compact disc digital audio system
Laser diode properties	Material: GaAlAs Wavelength: 780 nm Emission Duration: Continuous Laser out-put Power: Less than 44.6 µW*

** This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.*

Frequency response	5 – 20,000 Hz
Wow and flutter	Below the measurable limit
Signal-to-noise ratio	102 dB
Outputs	BUS control output (8 pins) Analog audio output (RCA pin)
Current drain	800 mA (during CD playback) 800 mA (during loading or ejecting a disc)
Operating temperature	–10°C to +55°C (14°F to 131°F)
Dimensions	Approx. 234.4 × 60 × 159.5 mm ($9^1/4 \times 2^3/8 \times 6^3/8$ in.) (w/h/d) not incl. projecting parts and controls
Mass	Approx. 1.5 kg (3 lb. 5 oz.)
Power requirement	12 V DC car battery (negative ground)
Supplied accessories	Disc magazine (1) Parts for installation and connections (1 set)

Design and specifications are subject to change without notice.

COMPACT DISC CHANGER

9-873-615-02
2004C05-1
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e Vehicle Company
Published by Sony Engineering Corporation

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SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

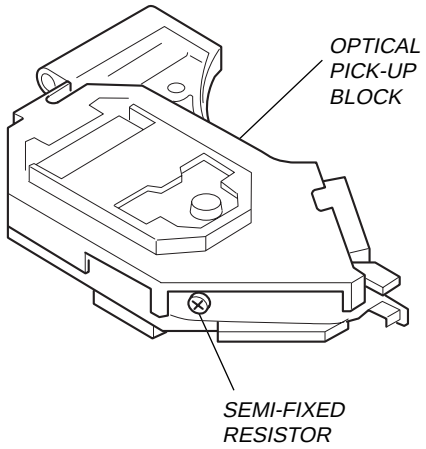
The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

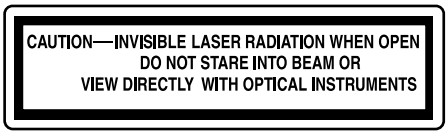
US model:

If the optical pick-up block is defective, please replace the whole optical pick-up block.
Never turn the semi-fixed resistor located at the side of optical pick-up block.



AEP model:

The CLASS 1 LASER PRODUCT label is located on the rear exterior.



This label is located on the drive unit's internal chassis.

When replacing the main chassis assy of mechanism deck which have the "CAUTION LABEL" attached, please be sure to put a new CAUTION LABEL (3-223-913-11) to the main chassis assy.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Notes on CD-R/CD-RW discs

- **You can play CD-Rs/CD-RWs (recordable CDs/rewritable CDs) on this unit (fig. E).**
- **Some CD-Rs/CD-RWs (depending on the equipment used for its recording or the condition of the disc) may not play on this unit.**
- **You cannot play a CD-R/CD-RW that is not finalized*.**
- **A CD-R/CD-RW to which a session can be added can be played.**

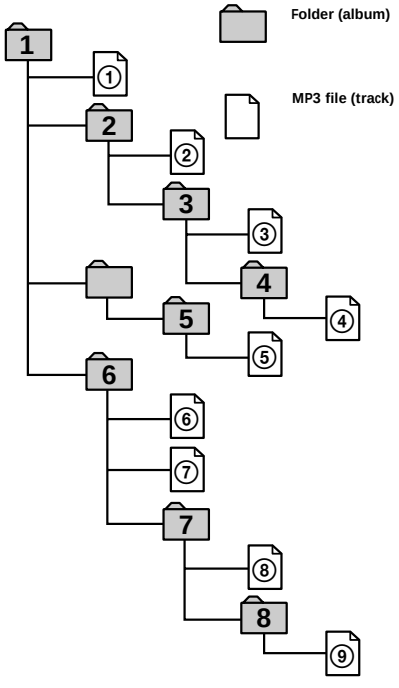
* *A process necessary for a recorded CD-R/CD-RW disc to be played on the audio CD player.*

E

Audio CD

MP3 files

About MP3 files



MP3 (MPEG 1 Audio Layer-3) is a standard technology and format for compressing a sound sequence. The file is compressed to about 1/10 of its original size. Sounds outside the range of human hearing are compressed while the sounds we can hear are not compressed.

Notes on discs

You can play MP3 files recorded on CD-ROMs, CD-Rs (recordable CDs), and CD-RWs (rewritable CDs). The disc must be in the ISO 9660*1 level 1 or level 2 format, or Joliet or Romeo in the expansion format. You can use a disc recorded in Multi Session*2.

*1 ISO 9660 Format

The most common international standard for the logical format of files and folders on a CD-ROM.
There are several specification levels. In Level 1, file names must be in the 8.3 format (no more than eight characters in the name, no more than three characters in the extension ".MP3") and in capital letters. Folder names can be no longer than eight characters. There can be no more than eight nested folder levels.
In level 2, file names can be up to 31 characters long (including the delimiter, the dot ".", and the extension ". MP3"). Each folder can have up to 8 trees.
For Joliet or Romeo in the expansion format, make sure of the contents of the writing software, etc.

*2 Multi Session

This is a recording method that enables adding of data using the Track-At-Once method. Conventional CDs begin at a CD control area called the Lead-in and end at an area called Lead-out. A Multi Session CD is a CD having multiple sessions, with each segment from Lead-in to Lead-out regarded as a single session.
CD-Extra: A format that contains audio tracks (audio CD data) in Session 1, and a data track in Session 2.
Mixed CD: A format that contains a data track and audio tracks (audio CD data) in a session.

Notes

- *If MP3 files and Audio data are mixed in a disc, the first identified file or data will be played back.*
- *With formats other than ISO 9660 level 1, folder names or file names may not be displayed correctly.*
- *When naming, be sure to add the file extension ".MP3" to the file name.*
- *If you put the extension ".MP3" to a file other than MP3, the unit cannot recognize the file properly and will generate random noise that could damage your speakers.*

The playback order of the MP3 files

The playback order of the folders and files is shown in the illustration above.

Notes

- *A folder that does not include an MP3 file is skipped.*
- *If you playback an MP3 file before the information on all the CDs in the disc magazine has been read, and then set the ignition to OFF or select another source, the beginning of the current track may play back when you resume playback.*
- *The unit reads the disc information (the number of folders and files, or the location of the data) before playback of an MP3 file. It may take more time to start playback of a disc with a complex file structure.*
- *When a disc magazine is inserted into the CD changer or the reset button of the connected car audio is pressed, the unit will automatically be activated and read the information on the CDs. When the information on all the CDs in the disc magazine has been read, the unit will automatically stop operation. The unit firstly reads all of the disc information in the disc magazine. Depending on the recording method, it may take some time to stop the operation even if you set the ignition key to OFF during disc reading. This is not a malfunction.*
- *The following discs take a longer time to start playback.*
  - *a disc recorded with complicated tree structure.*
  - *a disc recorded in Multi Session.*
  - *a disc to which data can be added.*

  We recommend that you make only one or two trees for each disc.
- *Depending on the condition of the disc, it may not play back. For details, please refer to "Notes on discs."*
- *Maximum folder number in a disc: 255* (including root folder and empty folders)*
- *Maximum file number in a disc: 511**
  * Maximum number of files and folders: 512
  When a file/folder name contains many characters, this number may become less than 512.

Cautions when playing a disc that is recorded in Multi Session

- When the first track of the first session is audio CD data: Non-music data information (track number, time, etc.) is displayed with no sound.
- When the first track of the first session is not audio CD data:
  - Audio CD data is played back normally; other data is played back with no sound. (MP3 file(s) cannot be played back.)
  - If no MP3 file is in the disc, "NO Music" is displayed and nothing is played back. (Audio CD data is not recognized.)

Note on character codes

Character codes vary depending on the master unit.
For details, refer to the operating instructions for the master unit.

Note on display of playing time

In the following cases, elapsed playing time may not be displayed accurately.
– when an MP3 file of VBR (variable bit rate) is played.
– during fast-forward/reverse.

Tip

- *To specify a desired playback order, before the folder or file name, input the order by number (e.g., "01," "02"), then record contents onto a disc. (The order differs depending on the writing software.)*
- *A disc/album/track name or track number that is over 99 may not be displayed accurately when this unit is connected to a master unit that does not support MP3. A master unit that supports MP3 is recommended.*

About ID3 tag version 2

Although not a malfunction, the following occurs when an MP3 file containing ID3 tag ver.2 is played:
– When skipping a portion of ID3 tag ver.2 (at the beginning of the track), sound is not output. Skip time changes depending ID3 tag ver.2 capacity. Example: At 64 kbytes, it is about 2 seconds (with RealJukebox).
– The displayed elapsed playing time when skipping a portion of ID3 tag ver.2 is inaccurate. For MP3 files of a bit rate other than 128 kbps, time is not displayed accurately during playback.
– When an MP3 file is created with MP3 conversion software (ex. RealJukebox), ID3 tag ver.2 will automatically be written.*
** "RealJukebox is a registered trademark of RealNetworks, Inc."*
As of December, 2001

FAQ- about MP3 Audio File

Q1 What is MP3?

MP3 (MPEG Audio Layer3) is a standard for compressing audio parts of Moving Pictures Experts Group (MPEG).
The special feature of MP3 is that the music data is compressed to about 1/10 of its original size while retaining the same sound quality as a CD or an MD.
Compared with an audio disc (maximum 74 minutes running time), MP3 lets you compress about 10 audio discs or 160 four-minute songs into a CD-R/RW of 650MB.

Note

Recorded music is limited to private use only. Use of music beyond this limit requires the permission of the copyright holders. Copyright law prohibits copying, distributing, or delivering all or part of the contents.

Q2 What kind of MP3 files can be played back?

MP3 files in CD-ROMs, CD-Rs, and CD-RWs can be played.
Pay attention to the following points when creating MP3 data CDs using your computer, CD-R/RW drive, writing software, or MP3 file.

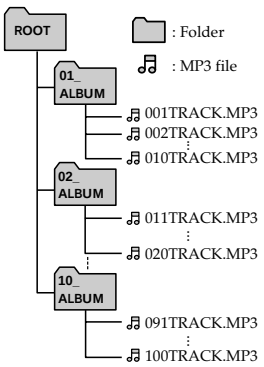
- The file must be in the ISO 9660 level 1 or level 2 format, or Joliet or Romeo in the ISO 9660 expansion format.
  A folder name or a file name with the format other than ISO 9660 level 1 may not be displayed correctly. When creating MP3 data CDs, the format of ISO 9660 level 1 is recommended.
- When naming, be sure to add the file extension ".MP3" to the MP3 file name. The unit cannot recognize an MP3 file without the extension ".MP3," or a file that is not MP3 format, even with the extension ".MP3."

Q3 Is there maximum number of folders or files to play?

Pay attention to the maximum numbers mentioned below.

- Maximum folder number in a disc: 255* (including root folder and empty folders)
- Maximum file number in a disc: 511*
  * Maximum number of files and folders: 512
    When a file/folder name contains many characters, this number may become less than 512.
- The maximum number of trees which can be played is 8.

The unit allows you to change the folders, to play just the files in your favorite folder repeatedly, or to play files randomly, create folders according to artist name or album, and put related MP3 files into folders to use the unit as a CD changer.



Q4 Can the unit play a data CD with folder levels?

The unit can play a data CD with folder levels.

Q5 Is there any restriction about the bit rate regarding playback of MP3 files?

There is no specific restriction, but a bit rate of more than 128kbps is recommended from the perspective of sound quality. The unit also supports VBR (Variable Bit Rate).

Note

Elapsed playing time may not be displayed accurately during cue/reverse.

Q6 Does the unit support a disk of 80 minutes running time (700 MB data capacity)?

The unit supports a disk of 80 minutes running time (700 MB data capacity).

Q7 Can the unit play a CD-R/RW containing both music CD data (CD-DA) and MP3 file data?

The first identified file or data will be played back.

Q8 Can the unit play a disc to which data can be added (non-finalized disc)?

The unit can play a non-finalized disc.

Q9 Can the unit play a Multi Session disc?

The unit can play a Multi Session disc. For details, refer to the operating instructions.

Q10 Does the unit support Emphasis?

The unit does not support Emphasis.

Q11 What is the sampling rate supporting the unit?

The unit is supported from 16kHz to 48kHZ.

MPEG1	48kHz	44.1kHz	32kHz
MPEG2	24kHz	22.05kHz	16kHz

Q12 Does the unit support the play list of m3u?

The unit does not support the play list of m3u.

Q13 Does the unit support ID3-Tag?

The unit supports ID3 tag ver.1.
Pay attention to the following points about ID3 tag ver.2.

About ID3 tag version 2

Although not a malfunction, the following occurs when an MP3 file containing ID3 tag ver.2 is played:
– When skipping a portion of ID3 tag ver.2 (at the beginning of the track), sound is not output. Skip time changes depending ID3 tag ver.2 capacity. Example: At 64 kbytes, it is about 2 seconds (with RealJukebox).
– The displayed elapsed playing time when skipping a portion of ID3 tag ver.2 is inaccurate. For MP3 files of a bit rate other than 128 kbps, time is not displayed accurately during playback.
– When an MP3 file is created with MP3 conversion software (ex. RealJukebox*), ID3 tag ver.2 will automatically be written.
* "RealJukebox is a registered trademark of RealNetworks, Inc."
As of December, 2001

Q14 Is a file name/a folder name of MP3 different from the name when creating a data CD (the name displayed on your computer)?

On this unit, a file name/a folder name is displayed as below.

- A file name/a folder name can be displayed up to 8 characters.
  A 9th or later character cannot be displayed or scrolled.
- A folder name or a file name in a format other than ISO 9660 level 1 may not be displayed correctly. The file name should only use one byte uppercase, one byte numeric characters, or an underscore ("_"). It should also be no more than 8 characters long, and with no more than three characters in the extension.
- Japanese phonetic symbols/ Chinese characters cannot be displayed.
  Only one byte uppercase (A-Z), one byte numeric character (0-9), and one byte symbol ("_", "-", "<", ">", "/", "+", "*") can be displayed. One byte lowercase (a-z) is changed to an uppercase character, and any other characters are displayed as "*".

Q15 MP3 files recorded onto a CD-R/RW cannot be played.

This may happen in following cases.

- The recording method onto CD-R/RW is the packet write method.
- The extension file is not an ".MP3."
- The file data is not MP3 format.
- Some recording condition (omission of data, etc.) or some disc condition (dirt, crack, curving, etc.) may cause inability to playback an MP3 file.

Q16 It takes some time to start playback of MP3 file.

The unit reads the disc information (the number of folders and files, or the location of the data) before playback of MP3 file. It may take more time to start playback of a disc with many trees.
Please refer to the instruction manual for details.

Q17 Playback skipping and no playback occur.

Recording condition onto CD-R/RW (omission of data, etc.) or disc condition (dirt, crack, curving, etc.) may cause playback skipping or no playback.

Q18 Can WAVE files be played back on this unit?

WAVE files cannot be played back on this unit.

Q19 Can other compressed formats, such as ATRAC3, be played back on the unit?

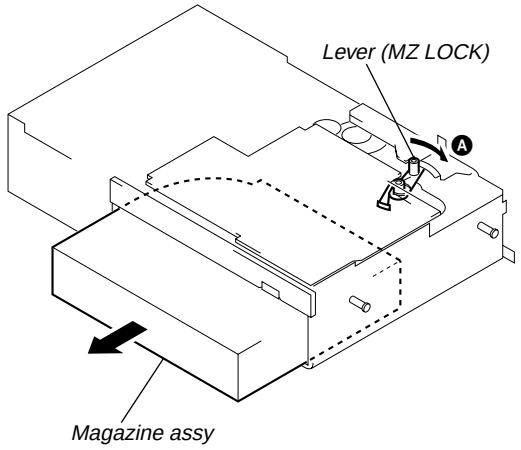
Only MP3 can be played back on the unit.

DISC MAGAZINE GETTING OUT PROCEDURE ON THE POWER SUPPLY IS OFF

Remove the CASE (LOWER. S) beforehand

1) Press the lever (MZ LOCK) in the direction of arrow Ⓐ.
2) Removal the magazine assy.

Note: Take out the magazine only when the tray is completely within the magazine. If the disk or tray is sticking out, turn on the power and eject the magazine.



TEST DISC

This set can playback a CD-R, CD-RW for audio use. When test this set, use the following test disc.
Test disc for CD-R: TCD-R082LMT (Part No.: J-2501-063-1)
Test disc for CD-RW: TCD-W082L (Part No.: J-2501-063-2)

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SECTION 1
GENERAL

This section is extracted from instruction manual.

Installation

Precautions

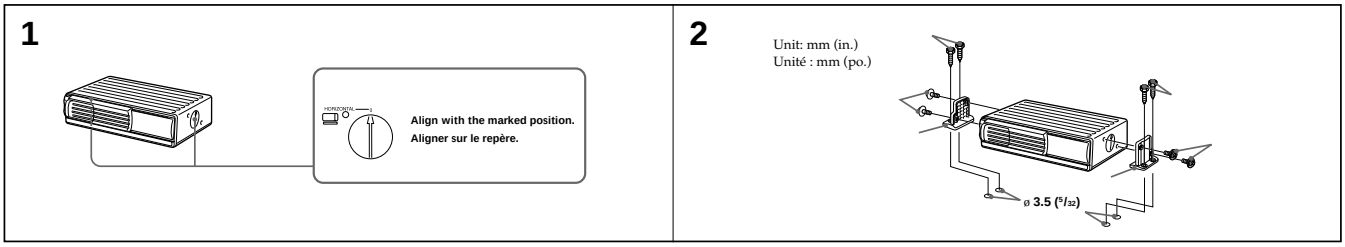
Choose the mounting location carefully, observing the following:
— The unit is not subject to temperatures exceeding 55°C (131°F) (such as in a car parked in direct sunlight).
— The unit is not subject to direct sunlight.
— The unit is not near heat sources (such as heaters).
— The unit is not exposed to rain or moisture.
— The unit is not exposed to excessive dust or dirt.
— The unit is not subject to excessive vibration.
— The fuel tank should not be damaged by the tapping screws.
— There should be no wire harnesses or pipes under the place where you are going to install the unit.
— The spare tire, tools or other equipment in or under the trunk should not be interfered with or damaged by the screws or the unit itself.

Be sure to use only the supplied mounting hardware for a safe and secure installation.
Use only the supplied screws.
Make holes of ø 3.5 mm (5/32 in.) only after making sure there is nothing on the other side of the mounting surface.

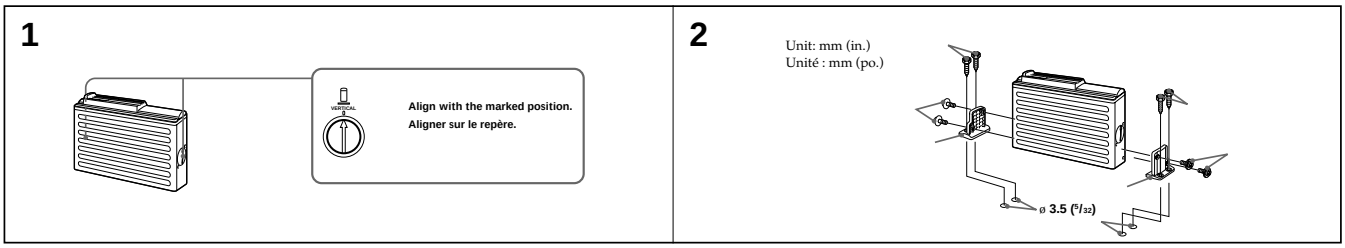
How to install the unit

The brackets provide two positions for mounting, high and low. Use the appropriate screw holes according to your preference.

Horizontal installation

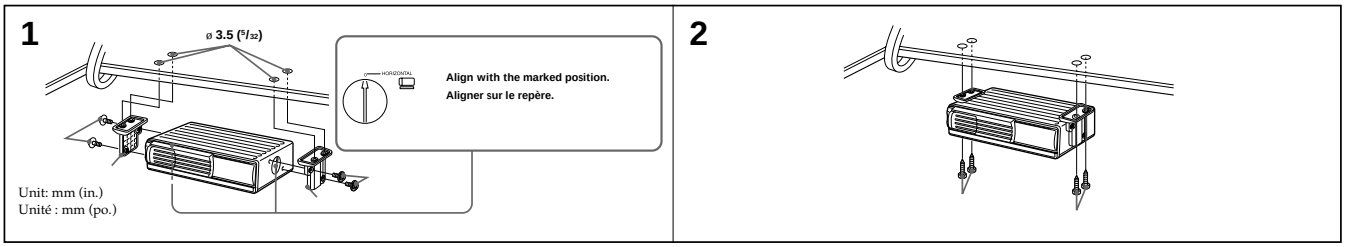


Vertical installation



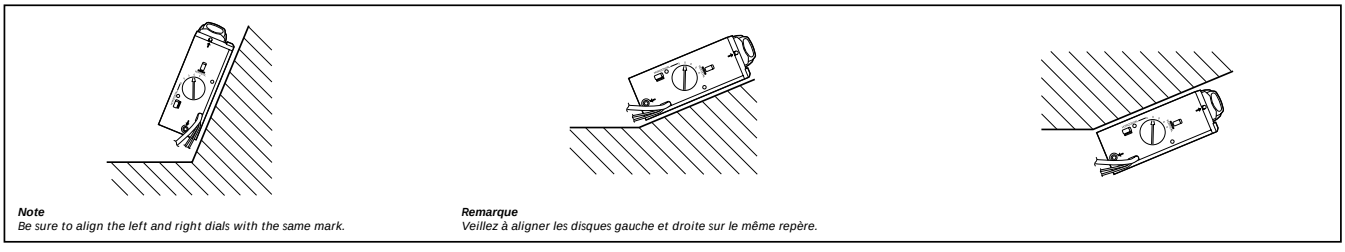
Suspended installation

When the unit is to be installed under the rear tray etc. in the trunk compartment, make sure the following provisions are made.
Choose the mounting location carefully so that the unit can be installed horizontally.
Make sure the unit does not hinder the movement of the torsion bar spring etc. of the trunk lid.



Inclined installation

After installing the unit, align the dials with one of the marks so that the arrows are as vertical as possible.



Note
Be sure to align the left and right dials with the same mark.

Installation

Prcautions

Choisir l'emplacement de montage en tenant compte des observations suivantes:
— Appareil non soumis à des températures dépassant 55°C (131°F) (comme dans une voiture parquée au soleil).
— Appareil non soumis au rayonnement solaire direct.
— Appareil à l'écart de sources de chaleur (comme des radiateurs).
— Appareil non exposé à la pluie ou à l'humidité.
— Appareil non exposé à des poussières ou à des souillures en excès.
— Appareil non exposé à des vibrations excessives.
— Vérifier que le réservoir d'essence ne risque pas d'être endommagé par les vis taraudeuses.
— Il ne doit pas y avoir de faisceau de fils ou de tuyaux à l'emplacement du montage.
— Vérifier que l'appareil ou les vis ne risquent pas d'endommager ou de gêner la roue de secours, les outils, ou autre objet dans le coffre.

Pour garantir la sécurité de l'installation, utiliser uniquement le matériel de montage fourni.
Utilisez uniquement les vis fournies.
Ne percez les trous de 3,5 mm (5/32 po.)ø qu'après vous être assuré qu'il n'y avait rien de l'autre côté de la surface de montage.

Installation de l'appareil

Les supports offrent deux positions de montage, haut et bas. Utilisez les trous de vissage appropriés en fonction de vos préférences.

Installation horizontale

Installation verticale

Installation suspendue

Si l'appareil doit être installé sous la plage arrière dans le coffre, par exemple, observer les précautions suivantes.
Bien choisir l'emplacement pour pouvoir installer l'appareil à l'horizontale.
Vérifier que l'appareil ne gêne pas les mouvements du ressort de fermeture du coffre, entre autres.

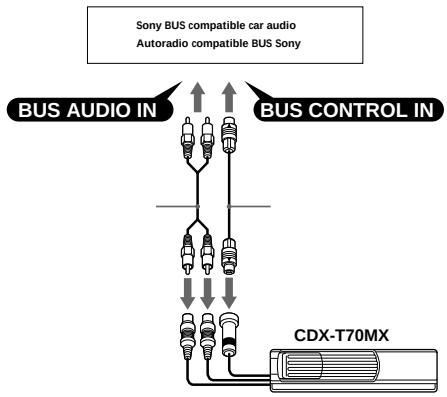
Installation inclinée

Après avoir installé l'appareil, alignez les disques sur un repère de façon à ce que les flèches soient dans la position la plus verticale possible.

Remarque
Veillez à aligner les disques gauche et droite sur le même repère.

Connections/Connexions

Connection diagram/Schéma de connexion



For details, refer to the Installation/Connections manual of the car audio.
Pour plus de détails, consulter le manuel d'installation/connexions de l'autoradio.

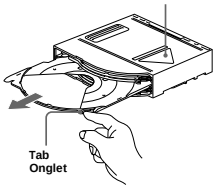
Note
For connecting two or more changers, the XA-C30 source selector (optional) is necessary.

Remarque
Pour raccorder deux ou plusieurs changeurs, le sélecteur de source XA-C30 (en option) est nécessaire.

Inserting a disc/Insertion d'un disque

1

With the arrow side facing up
Avec la partie fléchée tournée vers le haut



Labeled surface up
Etiquette vers le haut

Note
You cannot play 8cm (3 in.) CDs.

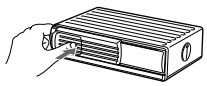
Remarque
Vous ne pouvez pas écouter de CD de 8 cm (3po.) sur ce lecteur.

Use the supplied disc magazine or the disc magazine XA-T7.The disc magazine XA-T6 can not be used with this unit.If you use any other magazine,it may cause a malfunction.

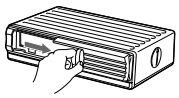
Utilisez le magasin à disques fourni ou un magasin à disques XA-T7. Vous ne pouvez pas utiliser de magasin à disques XA-T6 avec cet appareil. L'utilisation d'un autre type de magasin à disques risque de provoquer un dysfonctionnement.

2

Push to unlock the door
Poussez pour déverrouiller la porte



Slide open
Coulissez pour ouvrir

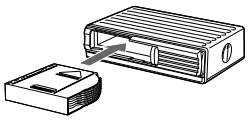


Note
To prevent injury, do not insert your hand in the CD changer.

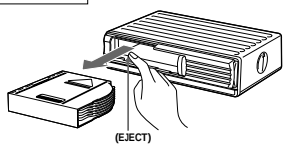
Remarque
Pour éviter toute blessure, ne pas introduire la main dans le changeur de CD.

3

Disc magazine
Chargeur de disques



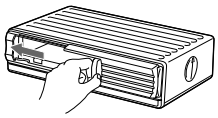
To remove
Retrait



If the disc magazine does not lock properly
Take out the magazine, and after pressing the (EJECT) button, re-insert it.

Si vous ne pouvez pas fermer le chargeur de disques
Sortez le chargeur et, après avoir appuyé sur la touche (EJECT), réinsérez-le.

4



Use the unit with the door closed completely
Otherwise, foreign matter may enter the unit and contaminate the lenses inside the changer.

Utilisez cet appareil avec la fenêtre complètement fermée
Sinon, des corps étrangers pourraient pénétrer dans l'appareil et encrasser les lentilles dans le lecteur.

Note
When a disc magazine is inserted into the CD changer or the reset button of the connected car audio is pressed, the unit will automatically be activated and read the information on the CDs. When the information on all the CDs in the disc magazine has been read, the unit will automatically stop operation. The unit firstly reads all of the disc information in the disc magazine. Depending on the recording method, it may take some time to stop the operation even if you set the ignition key to OFF during disc reading. This is not a malfunction.

Remarque
Quand un chargeur de disques est inséré dans le changeur de CD ou si la touche de réinitialisation de l'autoradio raccordé est enclenchée, l'appareil se met automatiquement en marche et reproduit les CD. Lorsque tous les CD du chargeur ont été reproduits, l'appareil s'arrête automatiquement. L'appareil commence par lire toutes les informations relatives au disque dans le chargeur de disque. Selon la méthode d'enregistrement, l'arrêt de l'opération peut demander quelques instants avant de s'arrêter si vous tournez la clé de contact sur OFF au cours de la lecture du disque. Il ne s'agit pas d'un dysfonctionnement.

Notes on the disc magazine

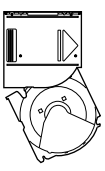
- Do not leave the disc magazine in locations with high temperatures and high humidity such as on a car dashboard or in the rear window where the disc magazine will be subjected to direct sunlight.
- Do not place more than one disc at a time onto one tray, otherwise the changer and the discs may be damaged.
- Do not drop the disc magazine or subject it to a violent shock.

Remarques sur le chargeur de disques

- Ne pas laisser le chargeur de disques dans un endroit très chaud ou très humide comme sur le tableau de bord ou sur la plage arrière de la voiture où il serait en plein soleil.
- Ne pas insérer plus d'un disque à la fois sur le plateau, sinon le changeur et les disques risquent d'être endommagés.
- Ne pas laisser tomber le chargeur de disques ni le cogner.

When the tray comes out
Normally, the trays will not come out of the magazine. However, if they are pulled out of the magazine, it is easy to re-insert them.

Lorsque le plateau sort
En principe, les plateaux ne sortent pas du chargeur. Toutefois, s'ils sortent du chargeur, il est facile de les réinsérer.



With the cut-away portion of the tray facing you, insert the right corner of the tray in the slot, then push in the left corner until it clicks.

Note
Do not insert the tray upside down or in the wrong direction.

Avec la portion découpée du plateau vous faisant face, insérer le coin droit du plateau dans la fente, puis enfoncer le coin gauche jusqu'au déclic.

Remarque
Ne pas insérer le plateau à l'envers ou dans le mauvais sens.

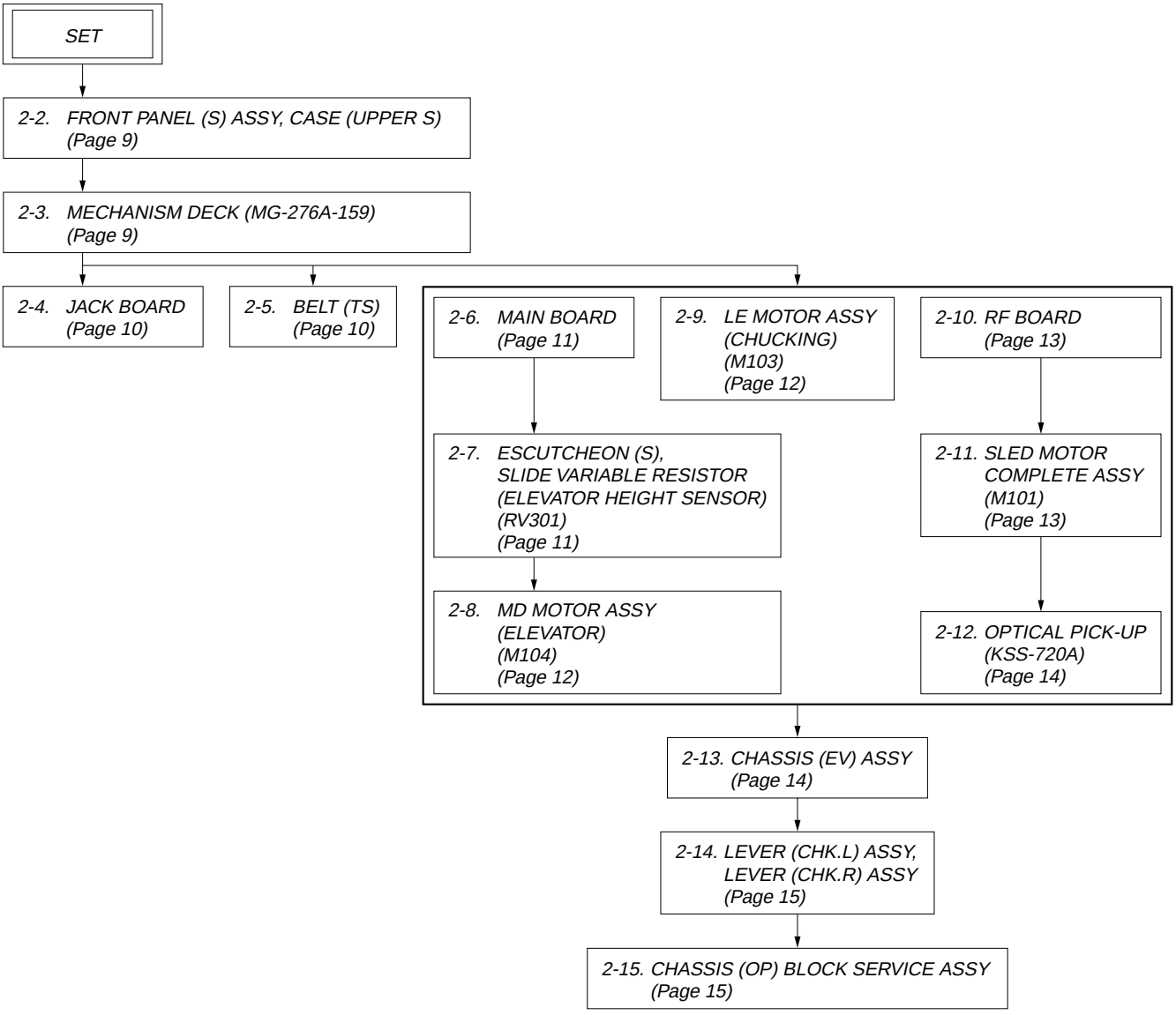
SECTION 2
DISASSEMBLY

• This set can be disassembled in the order shown below.

2-1. DISASSEMBLY FLOW

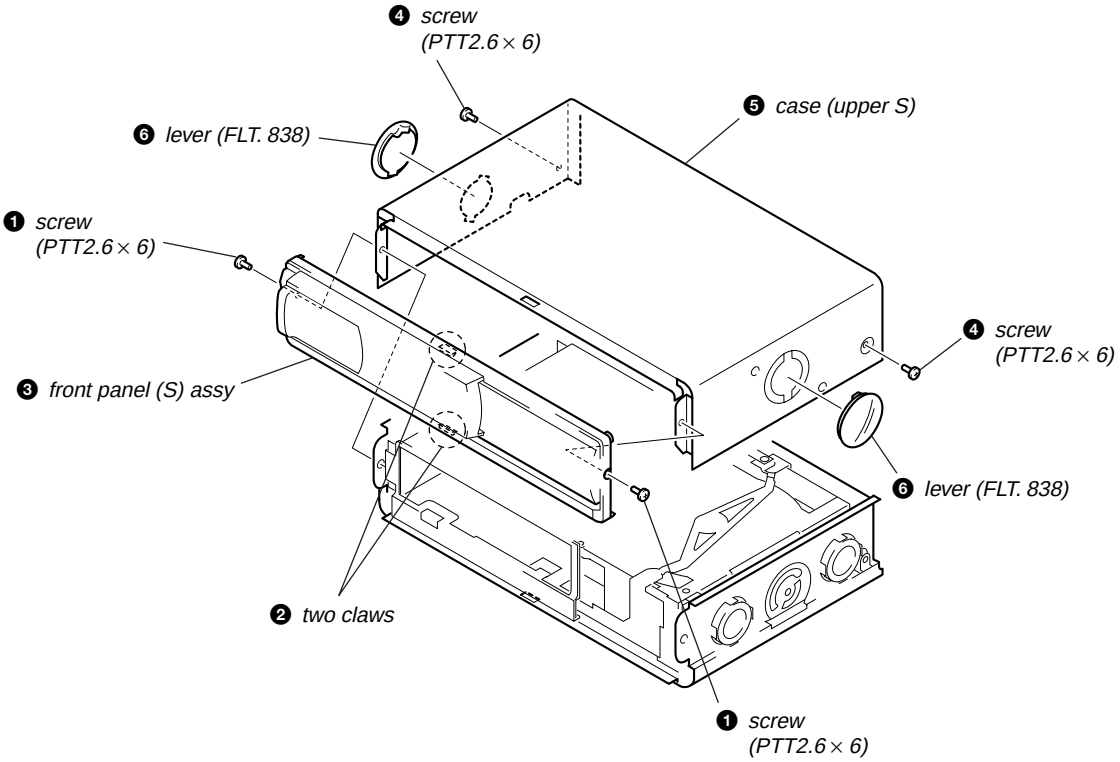
Note 1: *The process described in ⊟ can be performed in any order.*

Note 2: *Without completing the process described in ⊟, the next process can not be performed.*

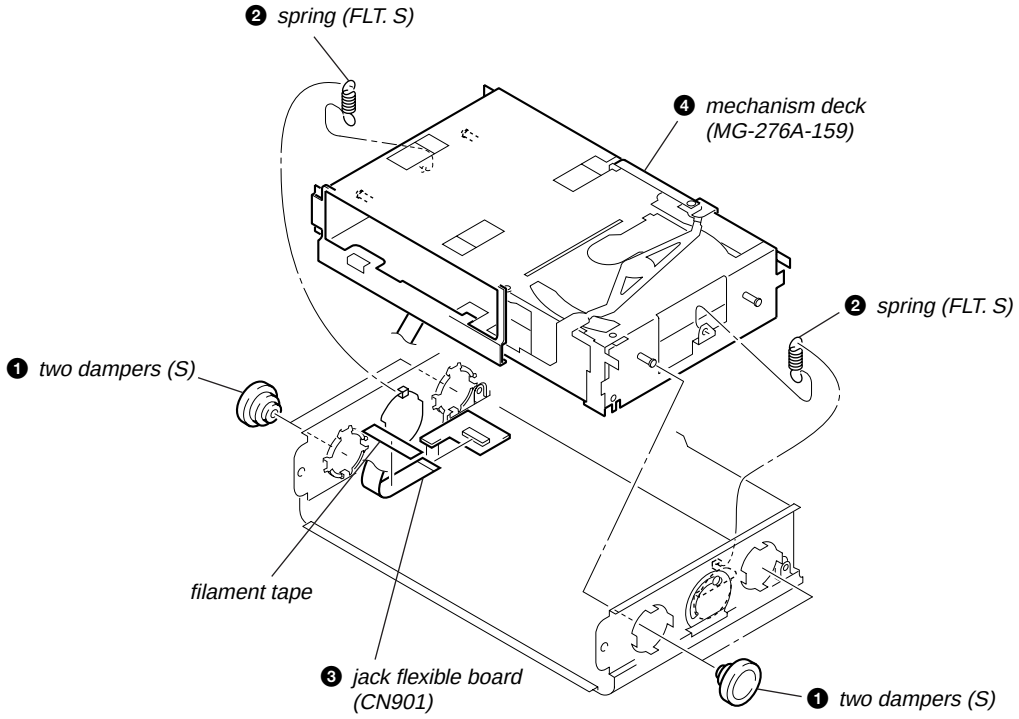

SET
2-2. FRONT PANEL (S) ASSY, CASE (UPPER S) (Page 9)
2-3. MECHANISM DECK (MG-276A-159) (Page 9)
2-4. JACK BOARD (Page 10)
2-5. BELT (TS) (Page 10)
2-6. MAIN BOARD (Page 11)
2-9. LE MOTOR ASSY (CHUCKING) (M103) (Page 12)
2-10. RF BOARD (Page 13)
2-7. ESCUTCHEON (S), SLIDE VARIABLE RESISTOR (ELEVATOR HEIGHT SENSOR) (RV301) (Page 11)
2-11. SLED MOTOR COMPLETE ASSY (M101) (Page 13)
2-8. MD MOTOR ASSY (ELEVATOR) (M104) (Page 12)
2-12. OPTICAL PICK-UP (KSS-720A) (Page 14)
2-13. CHASSIS (EV) ASSY (Page 14)
2-14. LEVER (CHK.L) ASSY, LEVER (CHK.R) ASSY (Page 15)
2-15. CHASSIS (OP) BLOCK SERVICE ASSY (Page 15)

Note: Follow the disassembly procedure in the numerical order given.

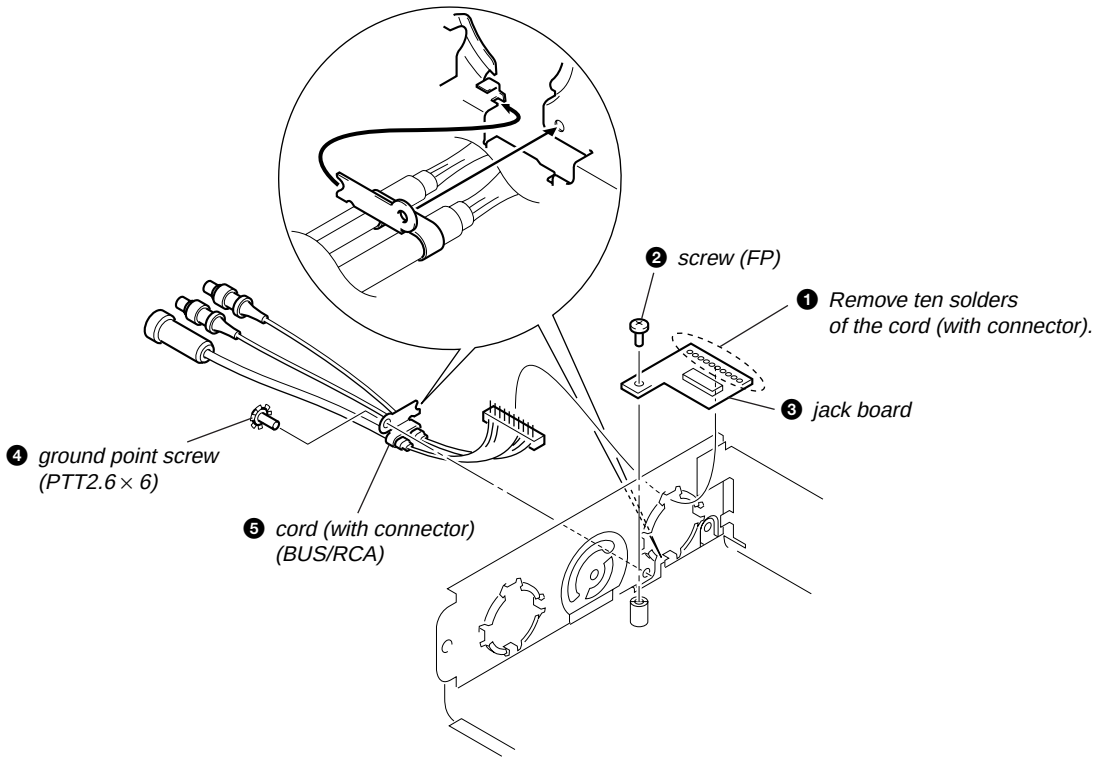
2-2. FRONT PANEL (S) ASSY, CASE (UPPER S)


❹ screw (PTT2.6 × 6)
❺ case (upper S)
❻ lever (FLT. 838)
❶ screw (PTT2.6 × 6)
❹ screw (PTT2.6 × 6)
❸ front panel (S) assy
❻ lever (FLT. 838)
❷ two claws
❶ screw (PTT2.6 × 6)

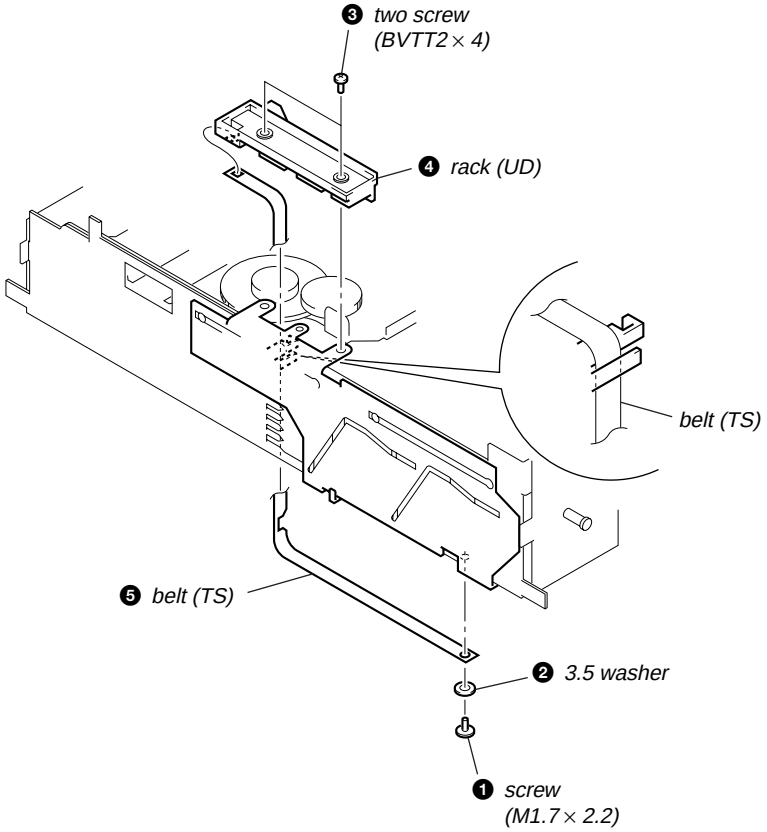
2-3. MECHANISM DECK (MG-276A-159)



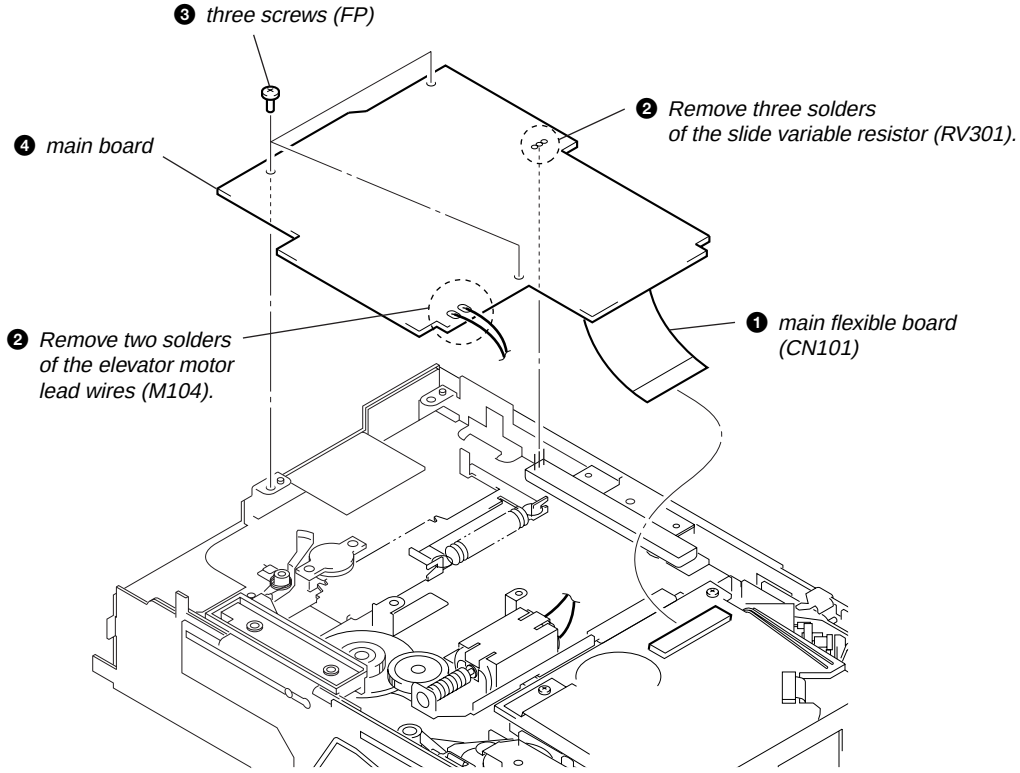
2-4. JACK BOARD


❷ screw (FP)
❶ Remove ten solders of the cord (with connector).
❸ jack board
❹ ground point screw (PTT2.6 × 6)
❺ cord (with connector) (BUS/RCA)

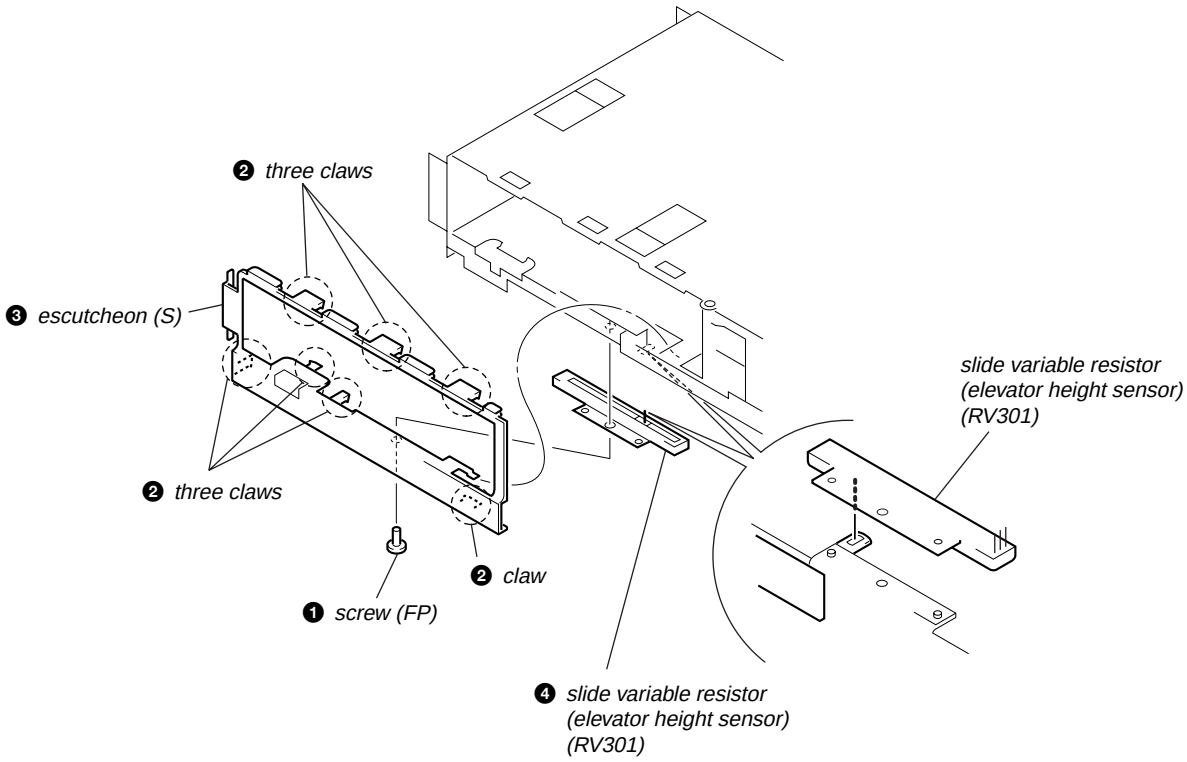
2-5. BELT (TS)



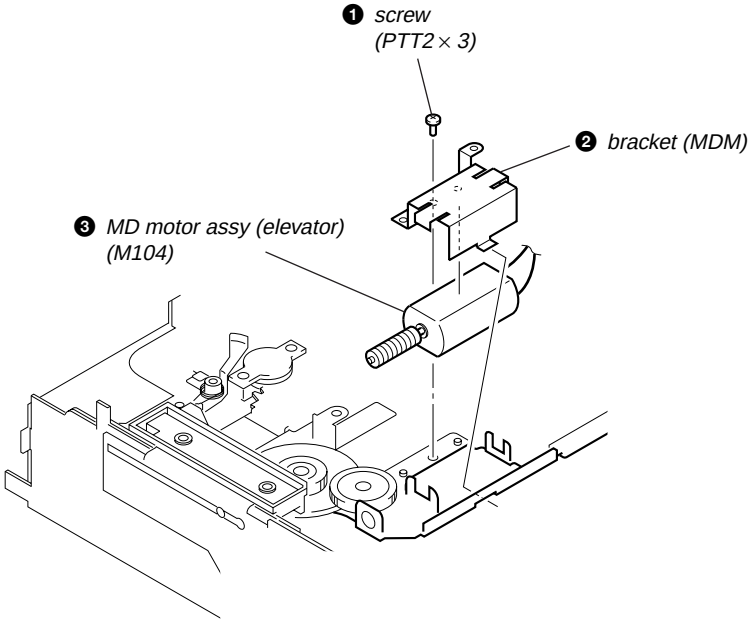
2-6. MAIN BOARD


❸ three screws (FP)
❹ main board
❷ Remove three solders of the slide variable resistor (RV301).
❷ Remove two solders of the elevator motor lead wires (M104).
❶ main flexible board (CN101)

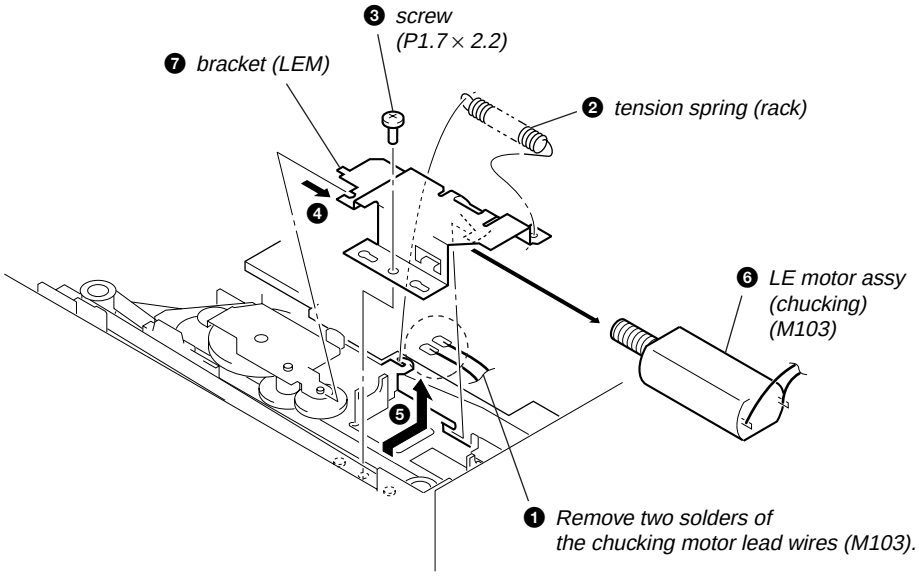
2-7. ESCUTCHEON (S), SLIDE VARIABLE RESISTOR (ELEVATOR HEIGHT SENSOR) (RV301)


❷ three claws
❸ escutcheon (S)
slide variable resistor (elevator height sensor) (RV301)
❷ three claws
❷ claw
❶ screw (FP)
❹ slide variable resistor (elevator height sensor) (RV301)

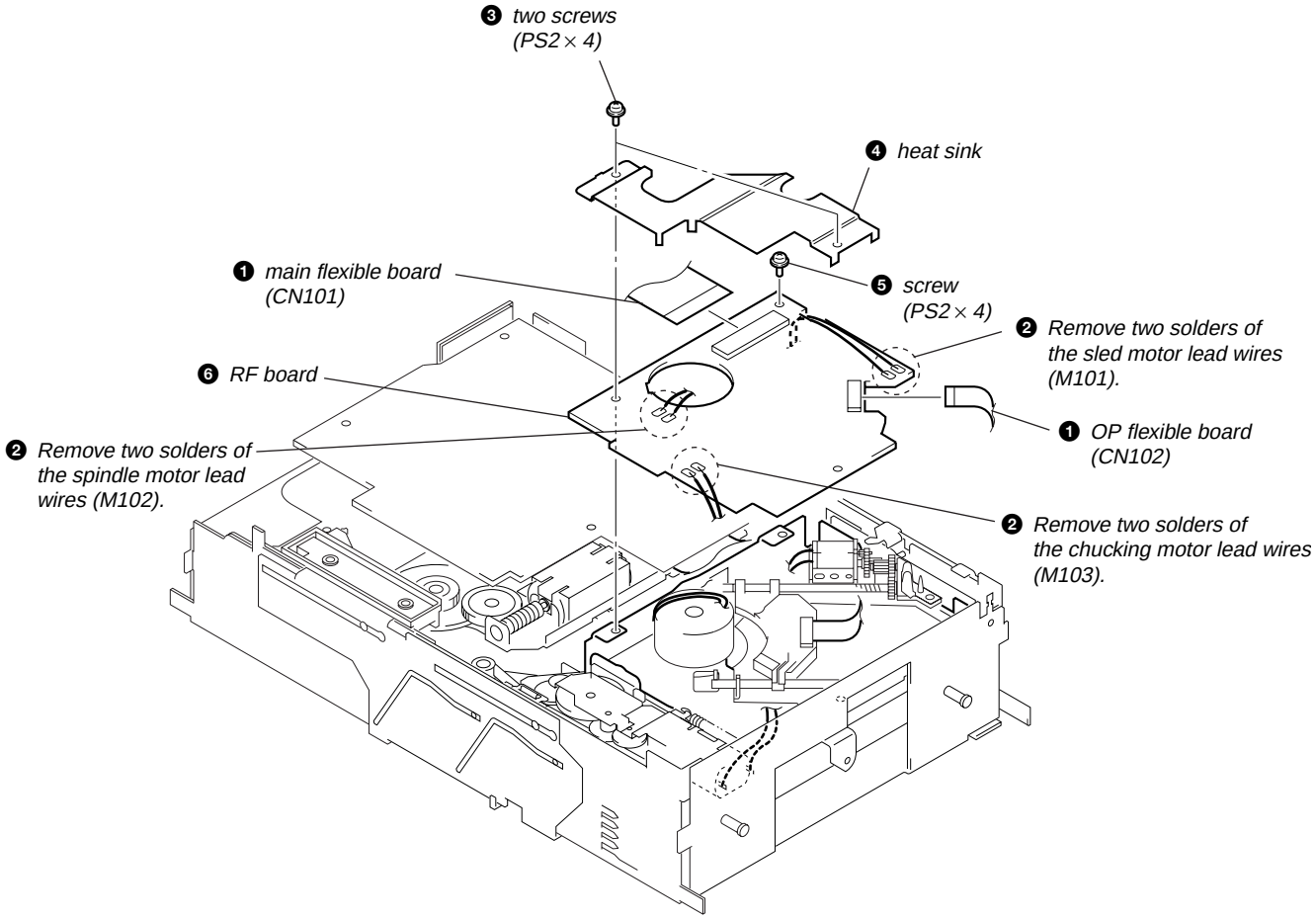
2-8. MD MOTOR ASSY (ELEVATOR) (M104)



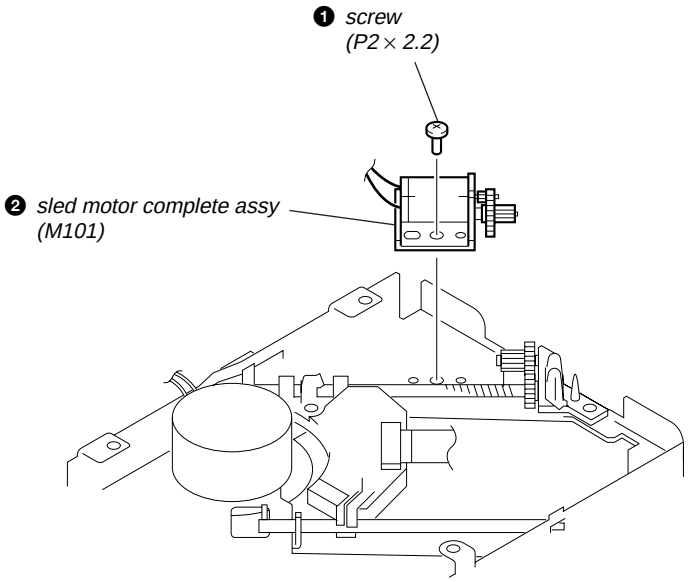
2-9. LE MOTOR ASSY (CHUCKING) (M103)



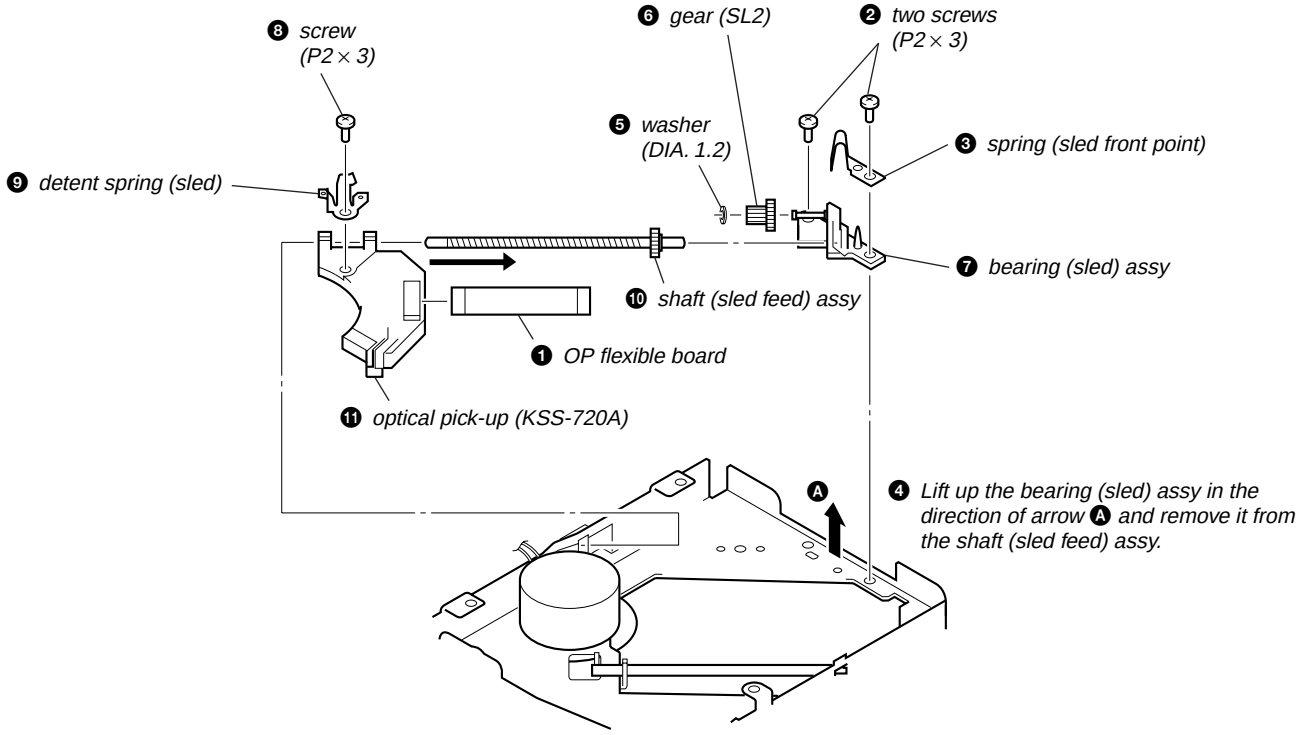
2-10. RF BOARD



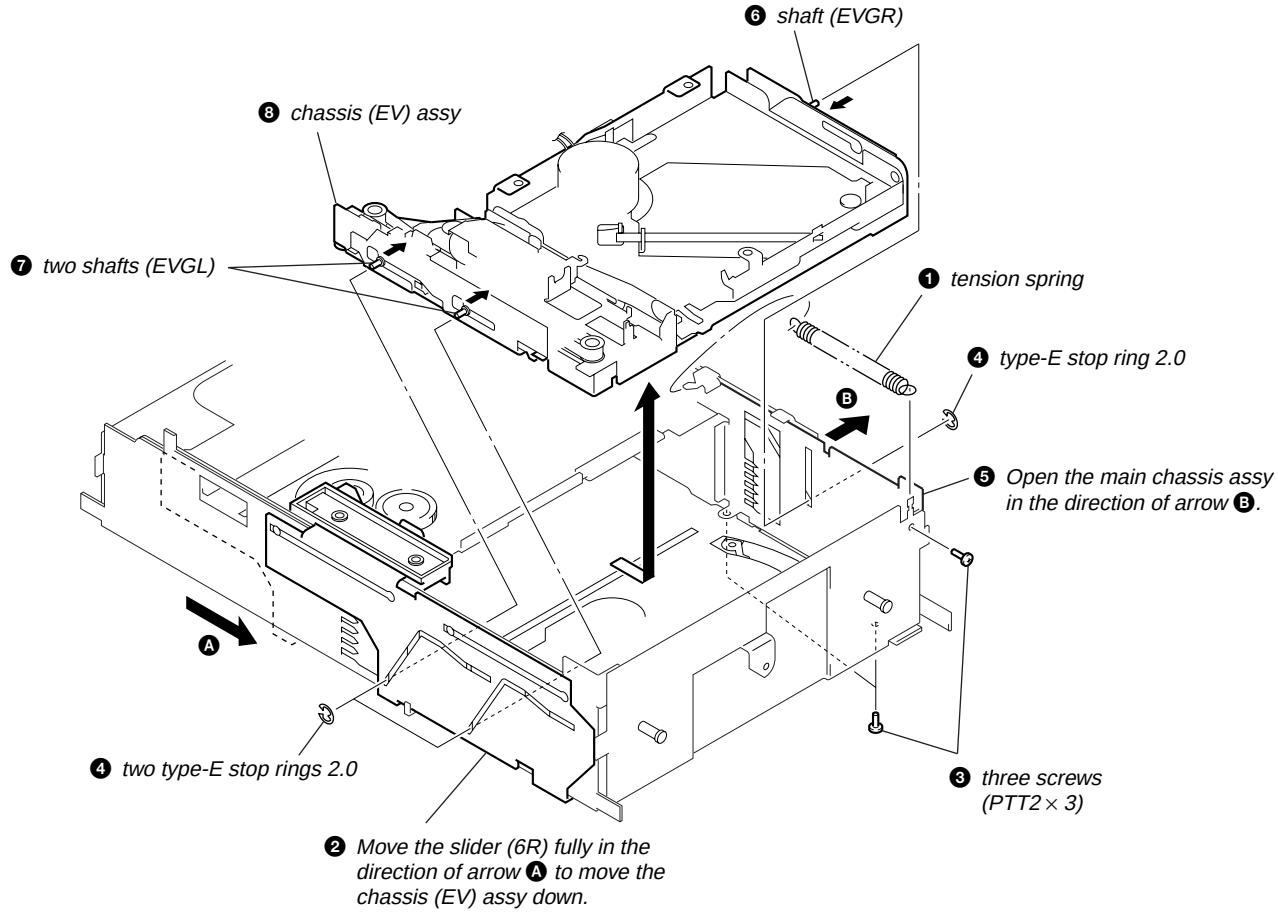
2-11. SLED MOTOR COMPLETE ASSY (M101)



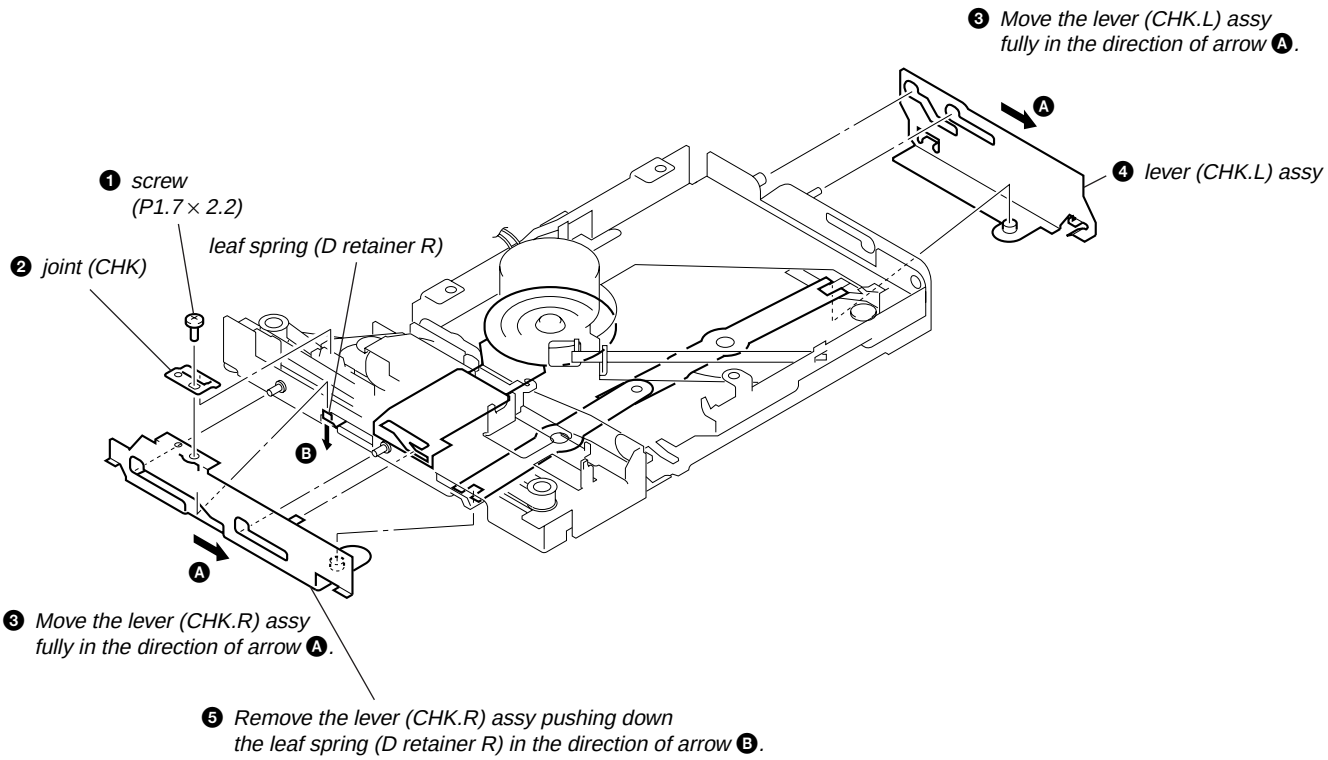
2-12. OPTICAL PICK-UP (KSS-720A)


❽ screw (P2 × 3)
❻ gear (SL2)
❷ two screws (P2 × 3)
❺ washer (DIA. 1.2)
❸ spring (sled front point)
❾ detent spring (sled)
❼ bearing (sled) assy
❿ shaft (sled feed) assy
❶ OP flexible board
⓫ optical pick-up (KSS-720A)
Ⓐ
❹ Lift up the bearing (sled) assy in the direction of arrow Ⓐ and remove it from the shaft (sled feed) assy.

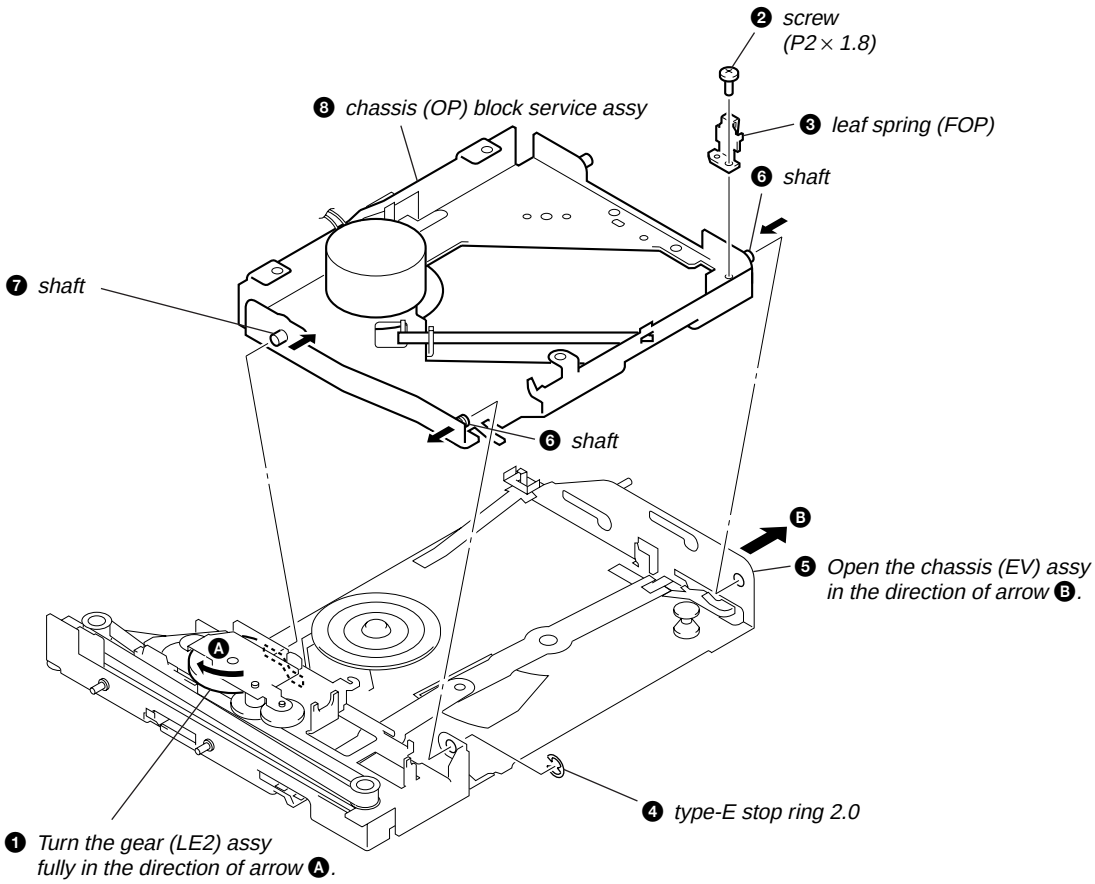
2-13. CHASSIS (EV) ASSY


❻ shaft (EVGR)
❽ chassis (EV) assy
❼ two shafts (EVGL)
❶ tension spring
❹ type-E stop ring 2.0
Ⓑ
❺ Open the main chassis assy in the direction of arrow Ⓑ.
Ⓐ
❹ two type-E stop rings 2.0
❸ three screws (PTT2 × 3)
❷ Move the slider (6R) fully in the direction of arrow Ⓐ to move the chassis (EV) assy down.

2-14. LEVER (CHK.L) ASSY, LEVER (CHK.R) ASSY


❸ Move the lever (CHK.L) assy fully in the direction of arrow Ⓐ.
❶ screw (P1.7 × 2.2)
❷ joint (CHK)
leaf spring (D retainer R)
❹ lever (CHK.L) assy
Ⓐ
Ⓑ
❸ Move the lever (CHK.R) assy fully in the direction of arrow Ⓐ.
❺ Remove the lever (CHK.R) assy pushing down the leaf spring (D retainer R) in the direction of arrow Ⓑ.

2-15. CHASSIS (OP) BLOCK SERVICE ASSY

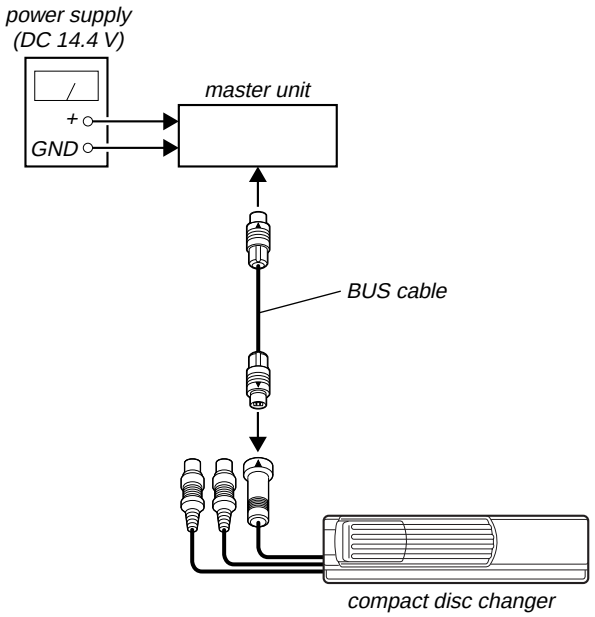

❷ screw (P2 × 1.8)
❽ chassis (OP) block service assy
❸ leaf spring (FOP)
❻ shaft
❼ shaft
❻ shaft
Ⓑ
❺ Open the chassis (EV) assy in the direction of arrow Ⓑ.
Ⓐ
❹ type-E stop ring 2.0
❶ Turn the gear (LE2) assy fully in the direction of arrow Ⓐ.

SECTION 3
MECHANICAL ADJUSTMENT

ELEVATOR HEIGHT (ADDRESS) ADJUSTMENT

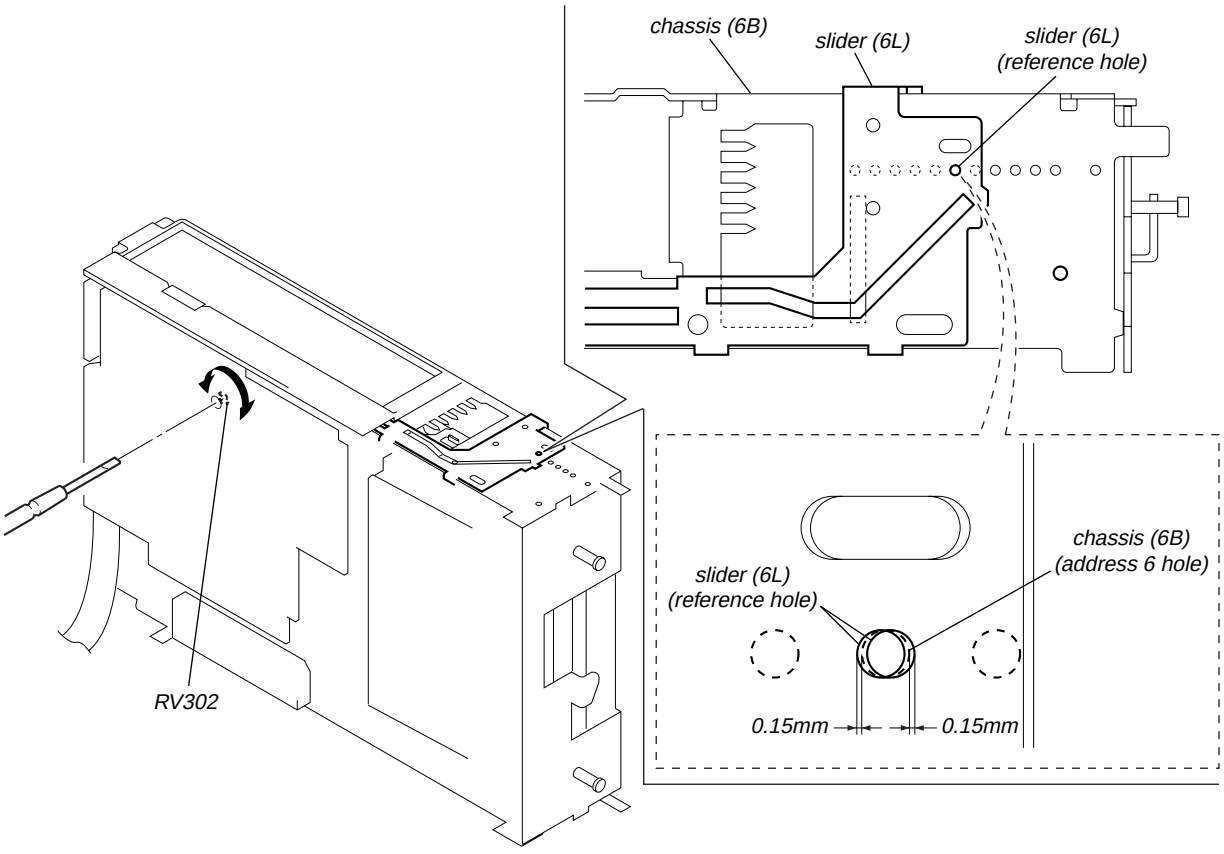
Note: This adjustments is necessary when the system controller (IC301), variable resistor (RV302), lever (CHK.L) assy, lever (CHK.R) assy, or chassis (EV) assy was replaced for any repair.

Connection:



Adjustment Method:

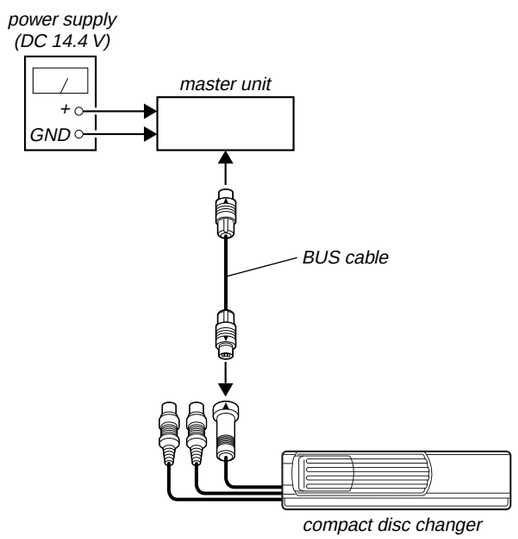
1. Connect this set to the master unit (e.g. MDX-C7970/C7970R), load a disc magazine, and place the set vertically as shown below.
2. Connect the regulated power supply to the master unit, and turn the power on.
3. Press the DISC button on the master unit and select DISC 6.
4. Adjust the variable resistor RV302 so that the reference holes of the slider (6L) and of the chassis (6B) meet within an error of ±0.15 mm when the tray is loaded at address 6.



SECTION 4
ELECTRICAL CHECK

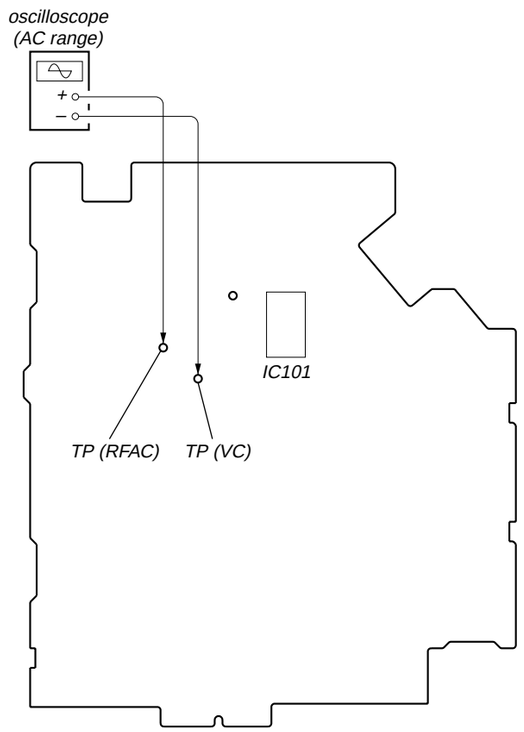
Note:
1. This check is performed with the set placed horizontally.
2. Power supply voltage: DC14.4 V (more than 3 A).
3. Be sure to use the disc “YEDS-18” parts code: 3-702-101-01, but only when indicated.
4. Use a master unit that supports SONY bus system.

Connection:



FOCUS BIAS CHECK

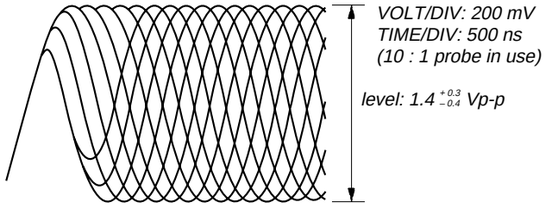
Connection:
– RF Board (Component Side) –



Procedure:
1. Connect the oscilloscope to TP (RFAC) and TP (VC) on the RF board.
2. Put the set into play mode by loading the disc (YEDS-18).
3. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note:
Clear RF signal waveform means that the shape “◊” can be clearly distinguished at the center of the waveform.

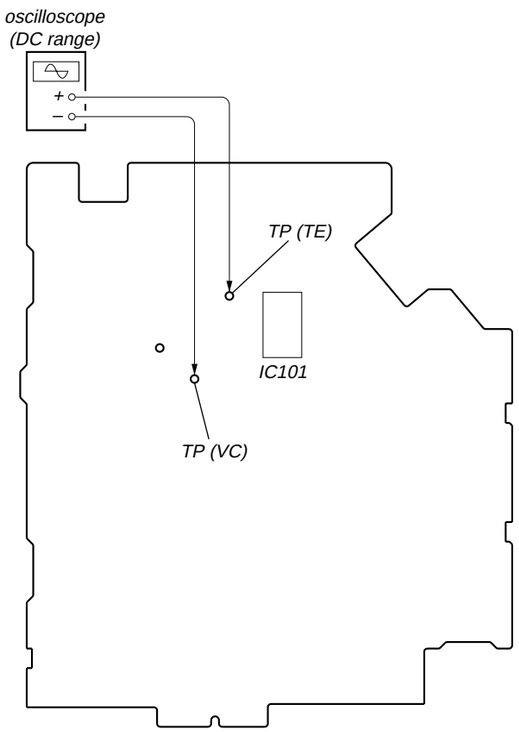
RF signal waveform



When observing the eye pattern, set the oscilloscope to AC range and raise the vertical sensitivity so that it may be easily seen.

TRACKING OFFSET CHECK

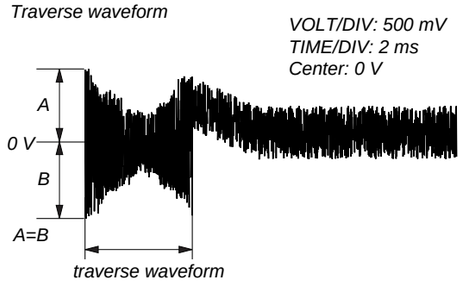
Connection:
– RF Board (Component Side) –



Procedure:
1. Connect the oscilloscope to TP (TE) and TP (VC) on the RF board.
2. Put the set into play mode by loading the disc (YEDS-18).
3. Press the [I◀◀ AMS ▶▶I] button on the master unit, and check the traverse waveform*.
4. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0 V dc, and check this level.

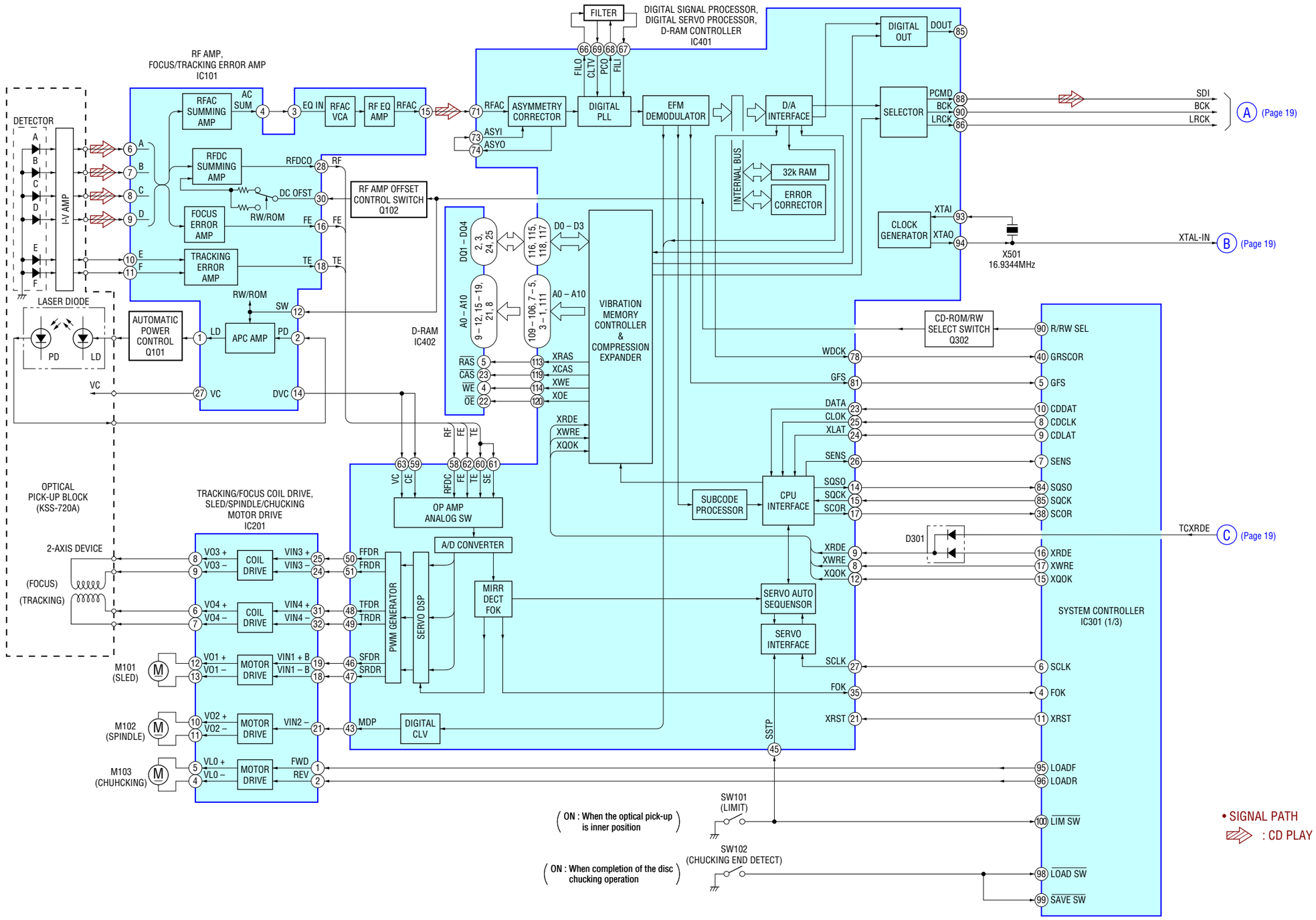
* Traverse waveform: This is the tracking error wave form appears when crossing the track.

Traverse waveform

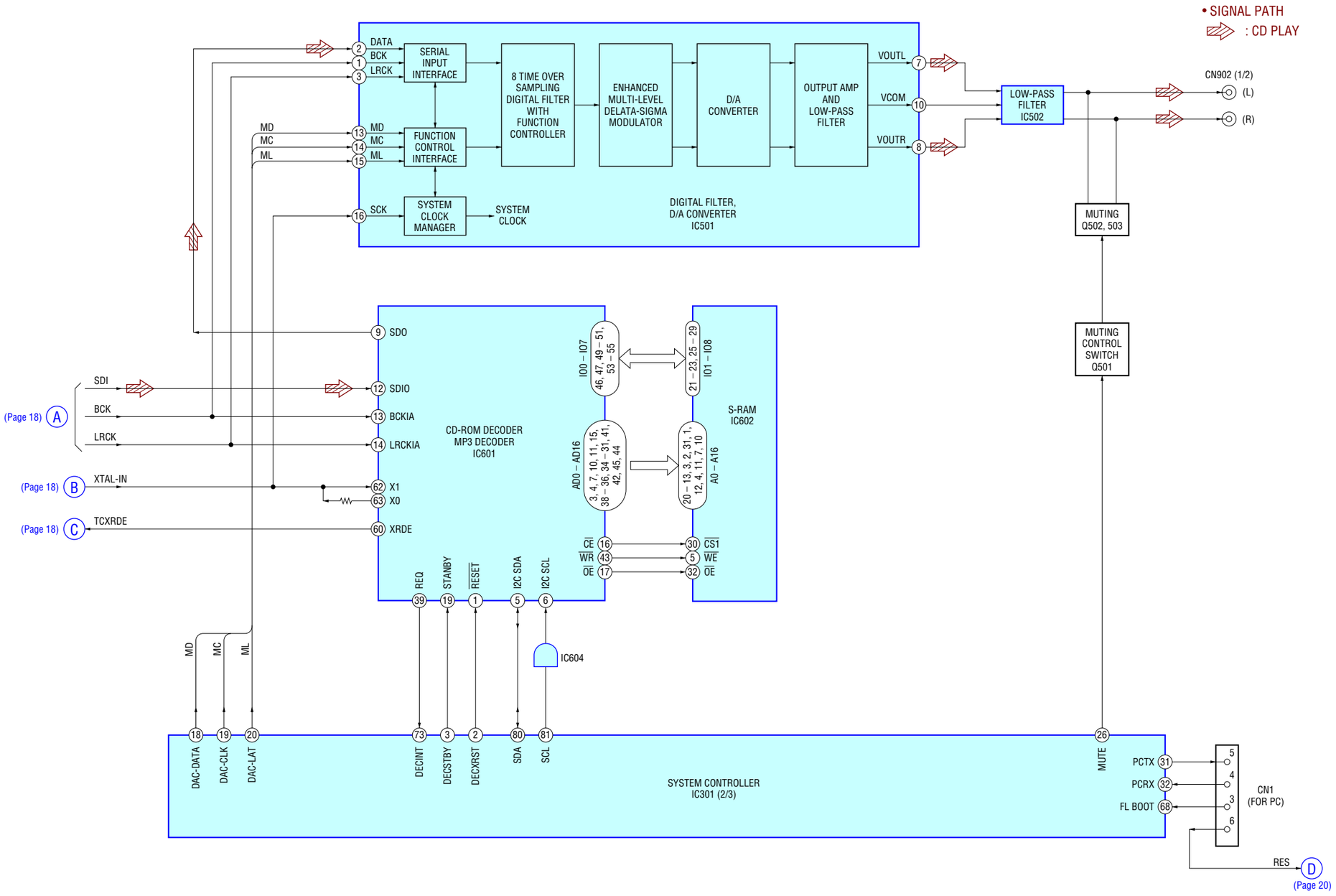


SECTION 5
DIAGRAMS

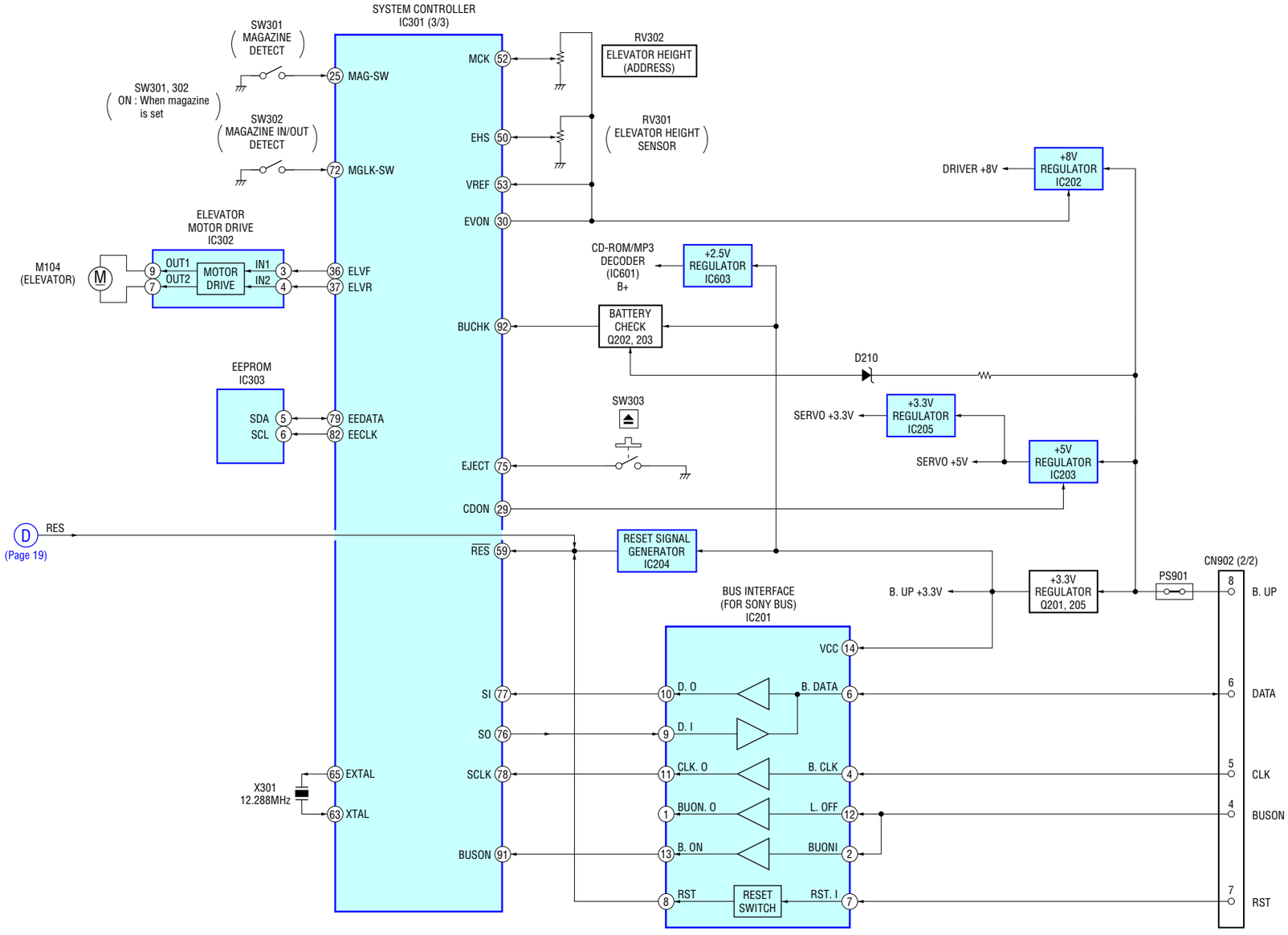
5-1. BLOCK DIAGRAM – SERVO Section –



5-2. BLOCK DIAGRAM – MAIN Section (1/2) –



5-3. BLOCK DIAGRAM – MAIN Section (2/2) –



5-4. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- △ : internal component.
- ▬ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

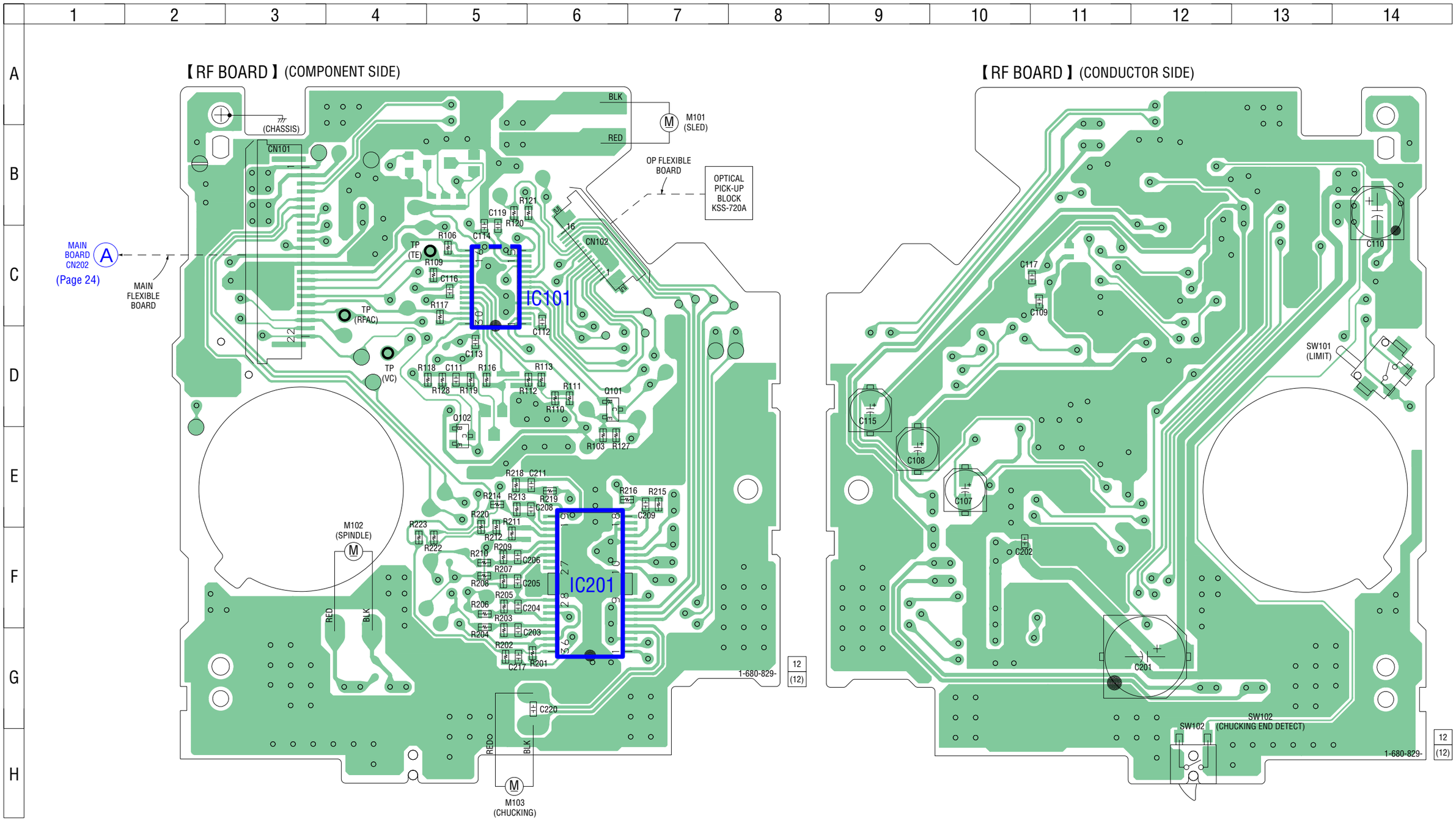
Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 14.4V and fed with regulated dc power supply from CD changer controller.
- Voltages and waveforms are dc with respect to ground in CD play mode.
  no mark : CD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD PLAY

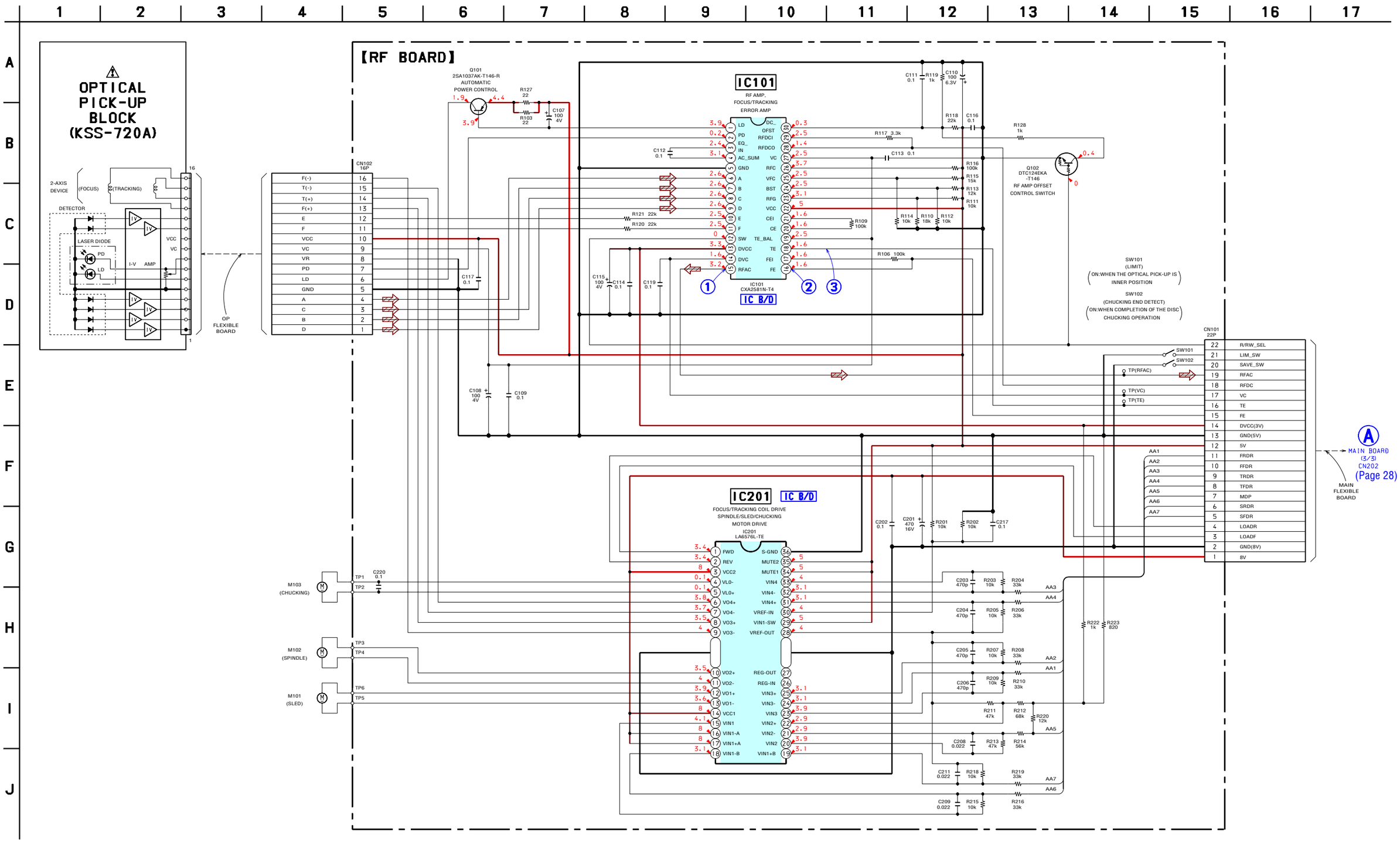
5-5. PRINTED WIRING BOARDS – RF Board –



- **Semiconductor Location**

Ref. No.	Location
IC101	C-5
IC201	F-6
Q101	D-6
Q102	E-5

5-6. SCHEMATIC DIAGRAM – RF Board – • See page 29 for Waveforms. • See page 32 for IC Block Diagrams.

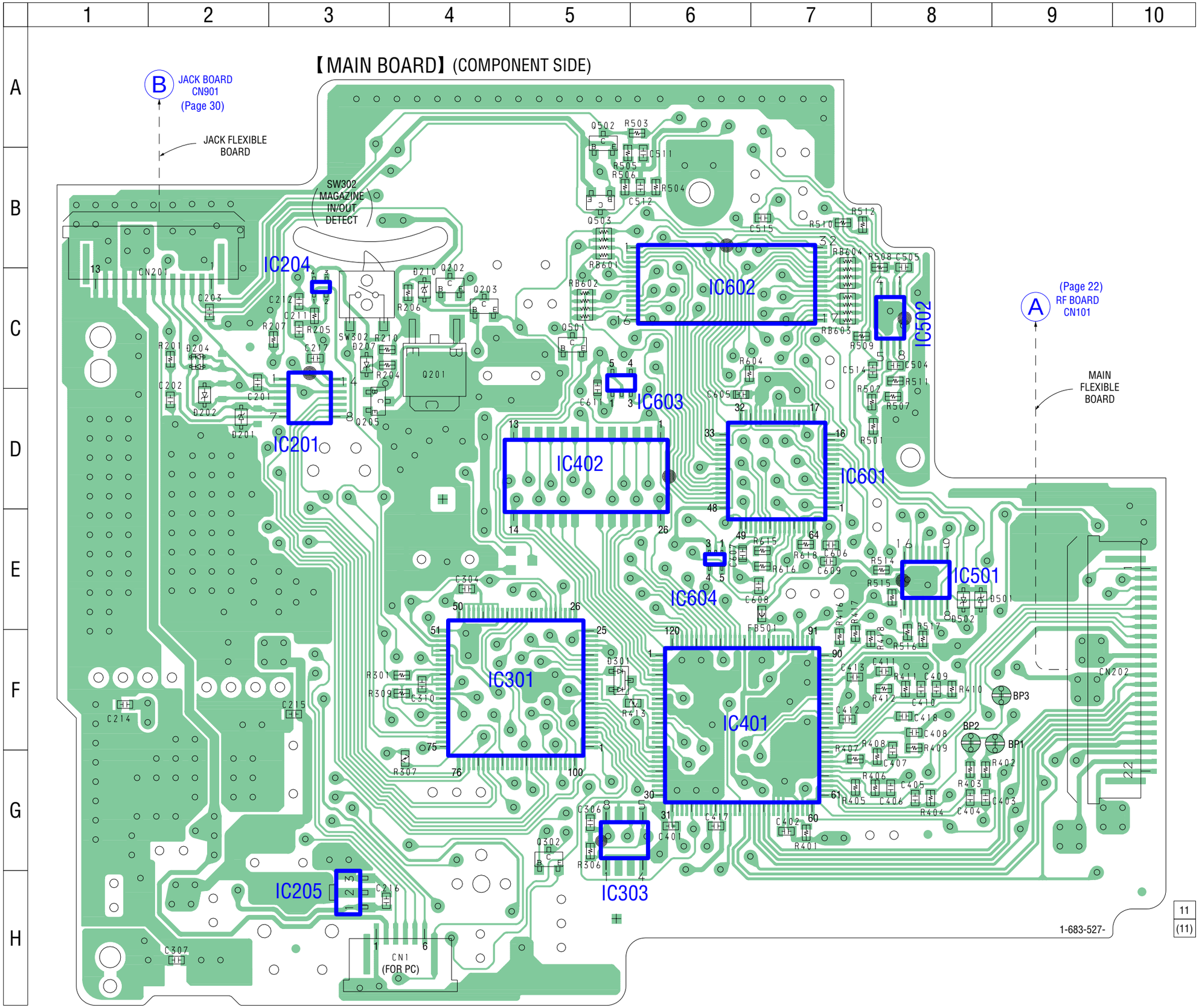


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-7. PRINTED WIRING BOARDS – MAIN Board (Component Side) –

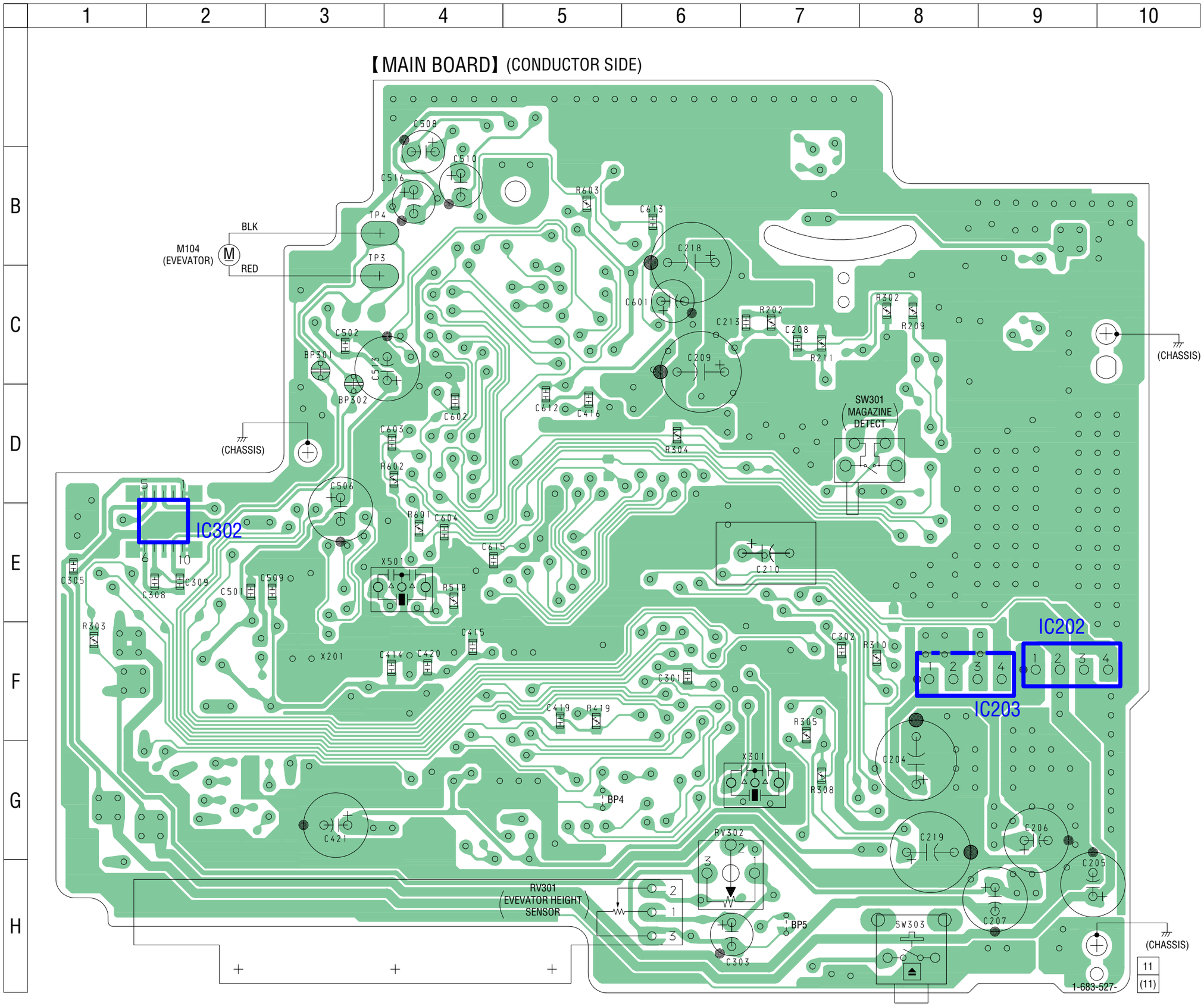
- **Semiconductor Location**

Ref. No.	Location
D201	D-2
D202	D-2
D204	C-2
D207	C-3
D210	C-4
D301	F-5
D501	E-8
D502	E-8
IC201	D-3
IC204	C-3
IC205	H-3
IC301	F-5
IC303	G-5
IC401	F-6
IC402	D-5
IC501	E-8
IC502	C-8
IC601	D-7
IC602	C-6
IC603	C-5
IC604	E-6
Q201	C-4
Q202	C-4
Q203	C-4
Q205	D-3
Q302	G-5
Q501	C-5
Q502	A-5
Q503	B-5



5-8. PRINTED WIRING BOARD – MAIN Board (Conductor Side) –

【MAIN BOARD】(CONDUCTOR SIDE)

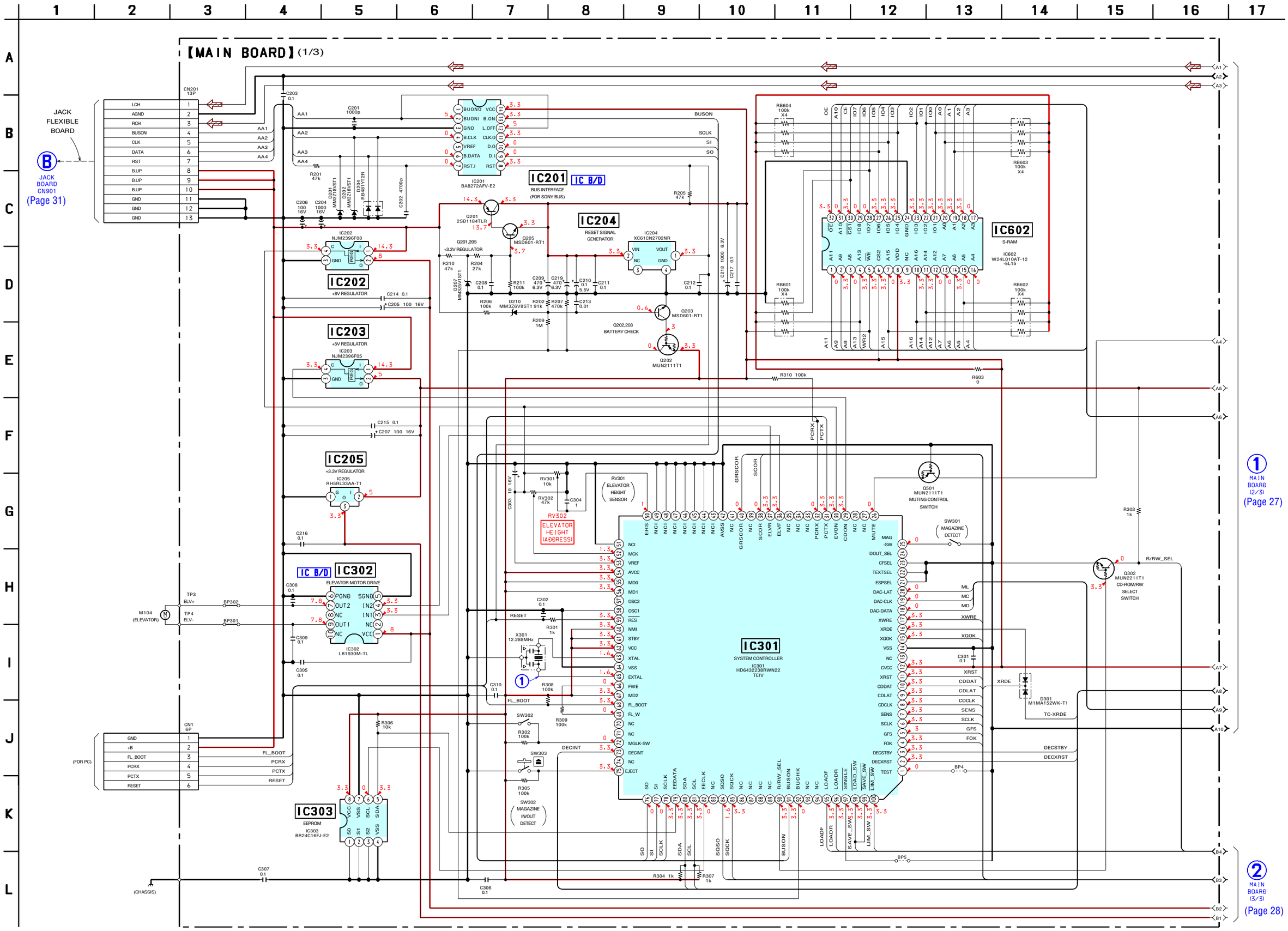


- **Semiconductor Location**

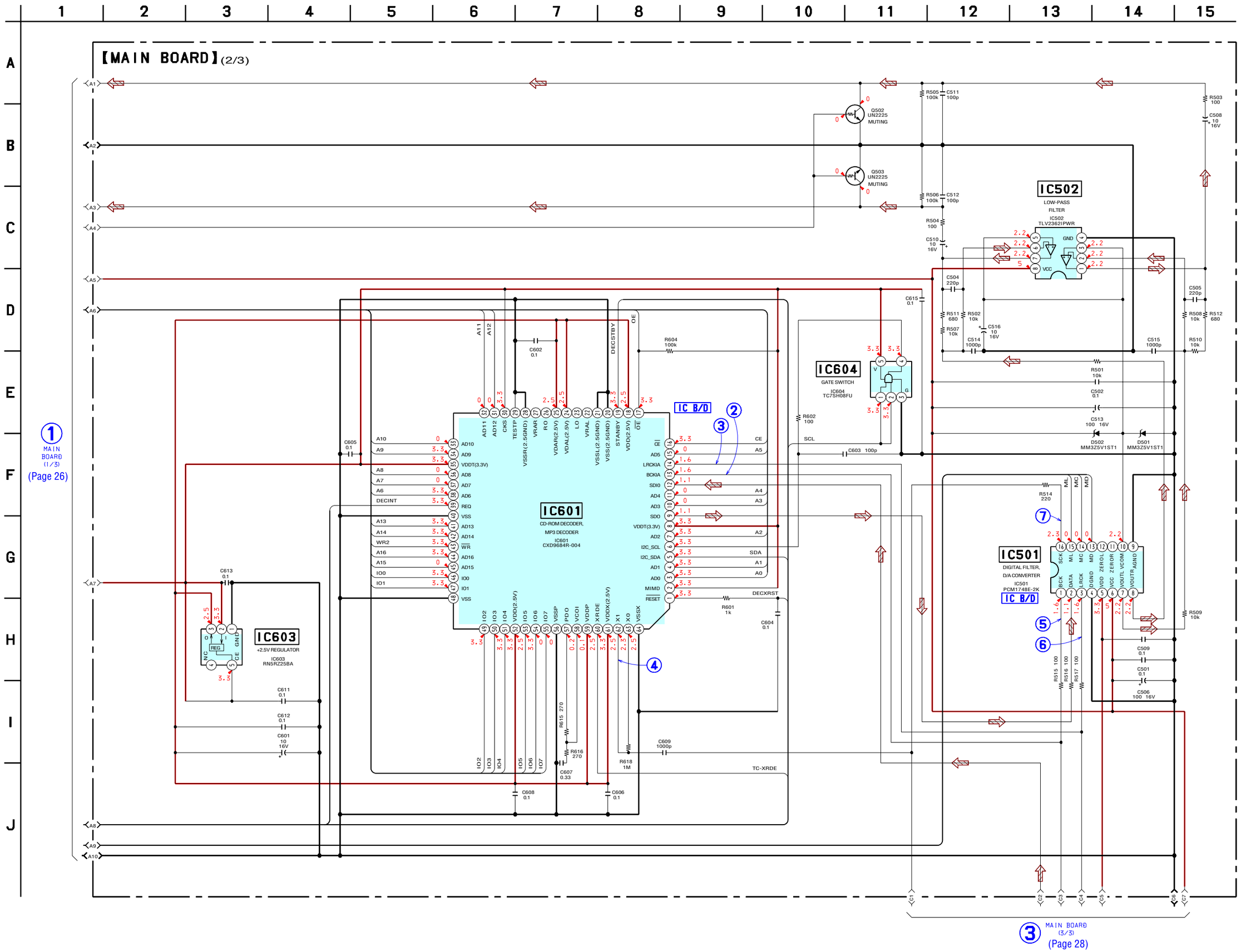
Ref. No.	Location
IC202	F-9
IC203	F-8
IC302	E-2

5-9. SCHEMATIC DIAGRAM – MAIN Board (1/3) –

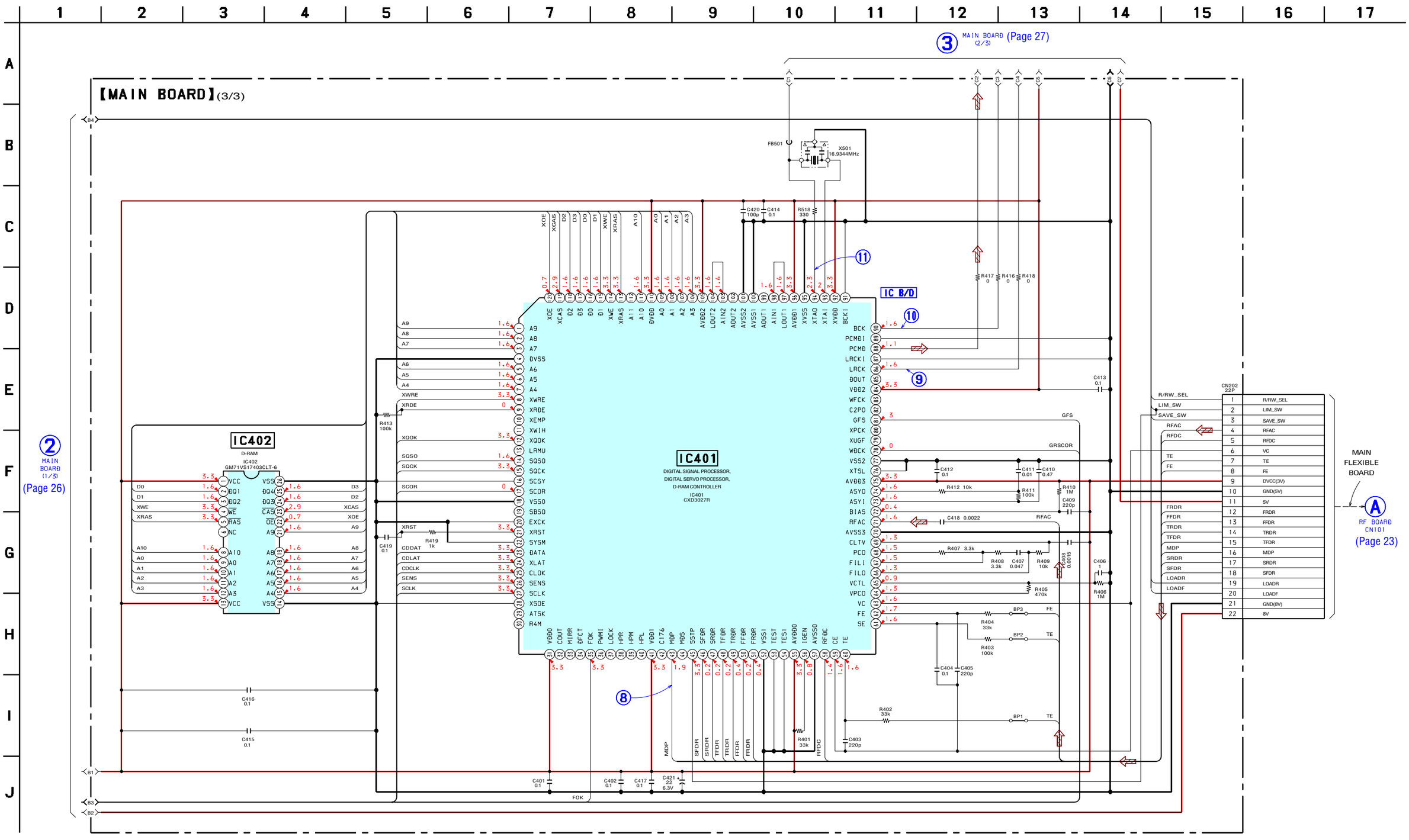
• See page 29 for Waveform. • See page 32 for IC Block Diagrams.



5-10. SCHEMATIC DIAGRAM – MAIN Board (2/3) – • See page 29 for Waveforms. • See page 32 for IC Block Diagrams.



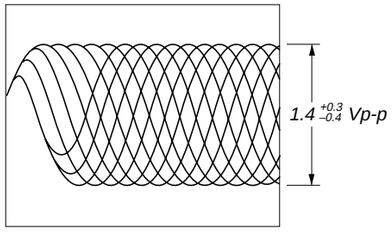
5-11. SCHEMATIC DIAGRAM – MAIN Board (3/3) – • See page 29 for Waveforms. • See page 32 for IC Block Diagram.



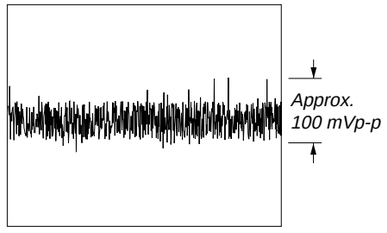
• **Waveforms**

– RF Board –

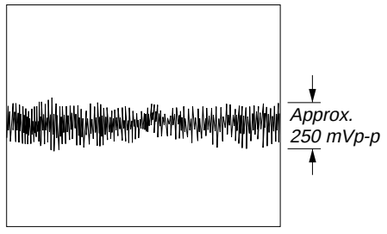
❶ IC101 ⑮ (RFAC)



❷ IC101 ⑯ (FE)

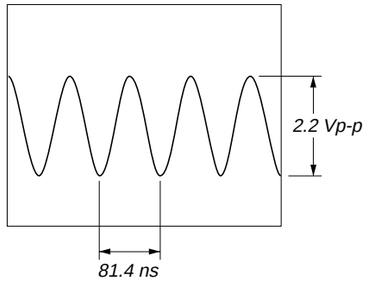


❸ IC101 ⑱ (TE)

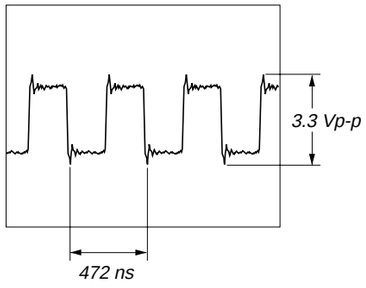


– MAIN Board –

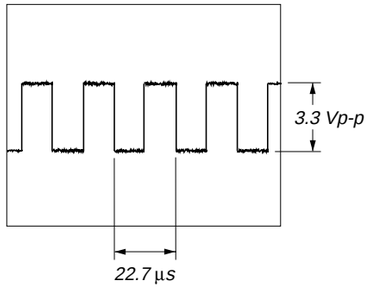
❶ IC301 ⑥⑤ (EXTAL)



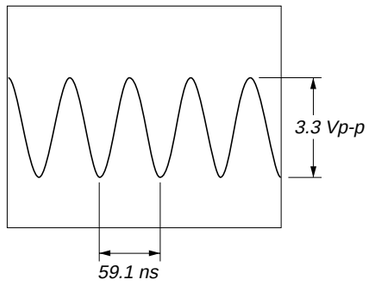
❷ IC601 ⑬ (BCKIA)



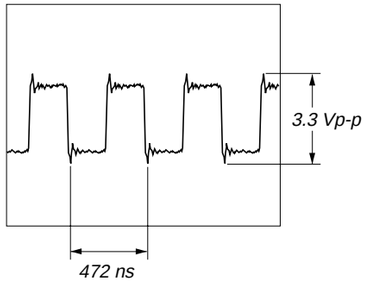
❸ IC601 ⑭ (LRCKIA)



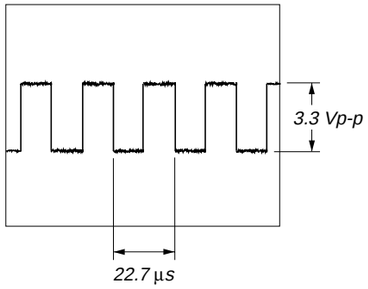
❹ IC601 ⑫ (X1)



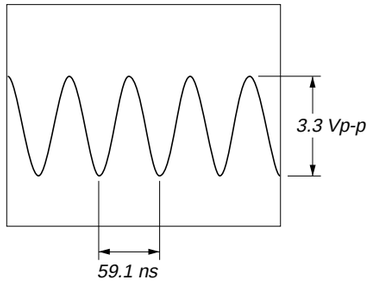
❺ IC501 ① (BCK)



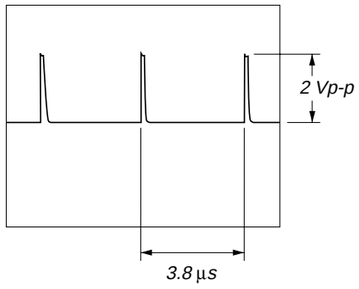
❻ IC501 ③ (LRCK)



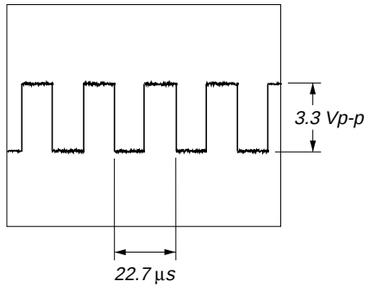
❼ IC501 ⑯ (SCK)



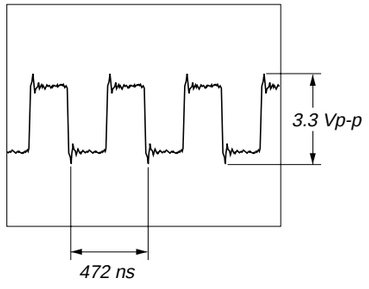
❽ IC401 ㊸ (MDP)



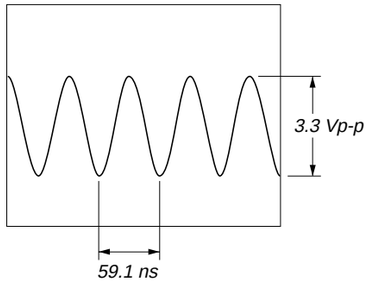
❾ IC401 ⑧⑥ (LRCK)



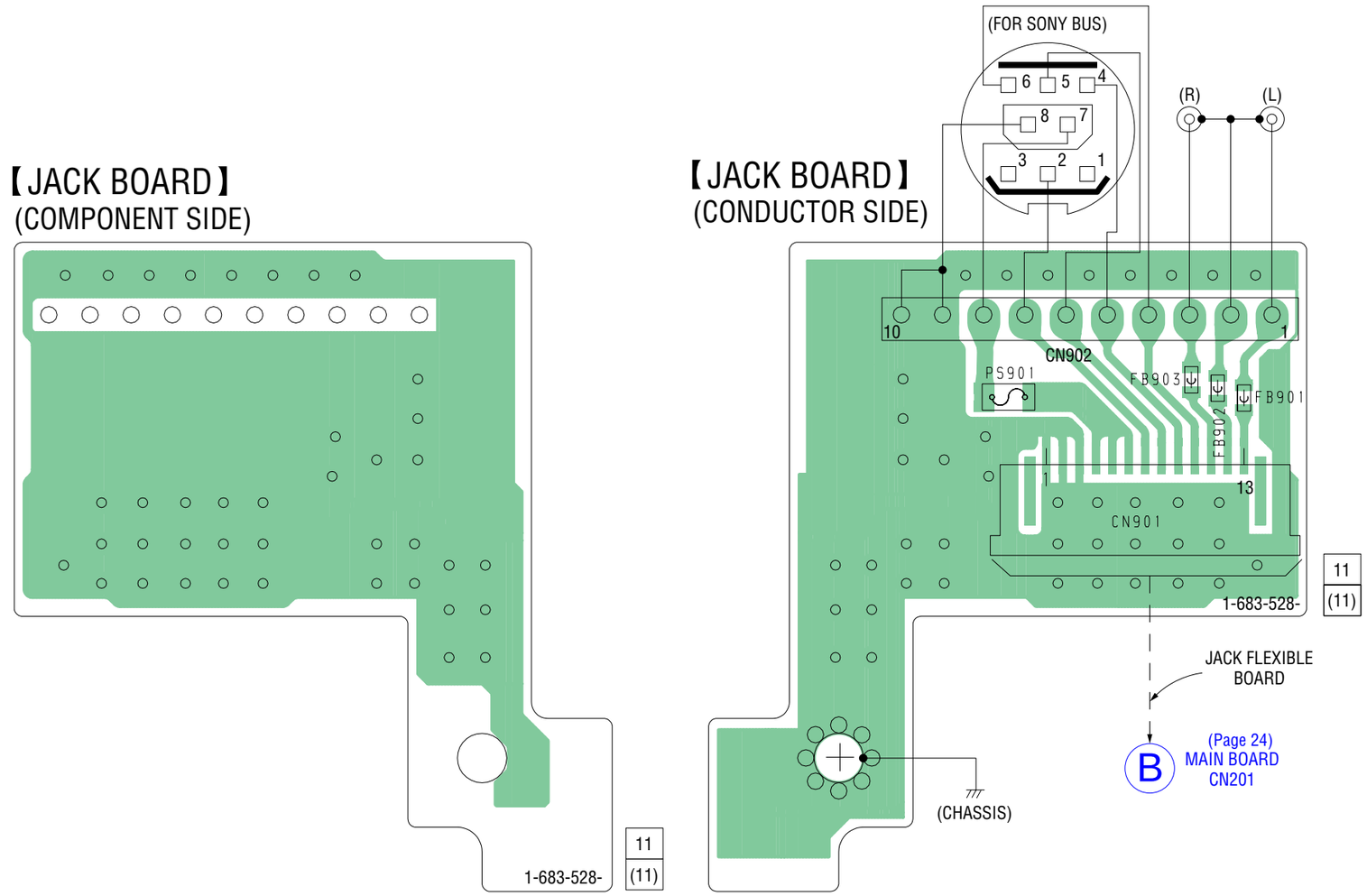
❿ IC401 ⑨⓪ (BCK)



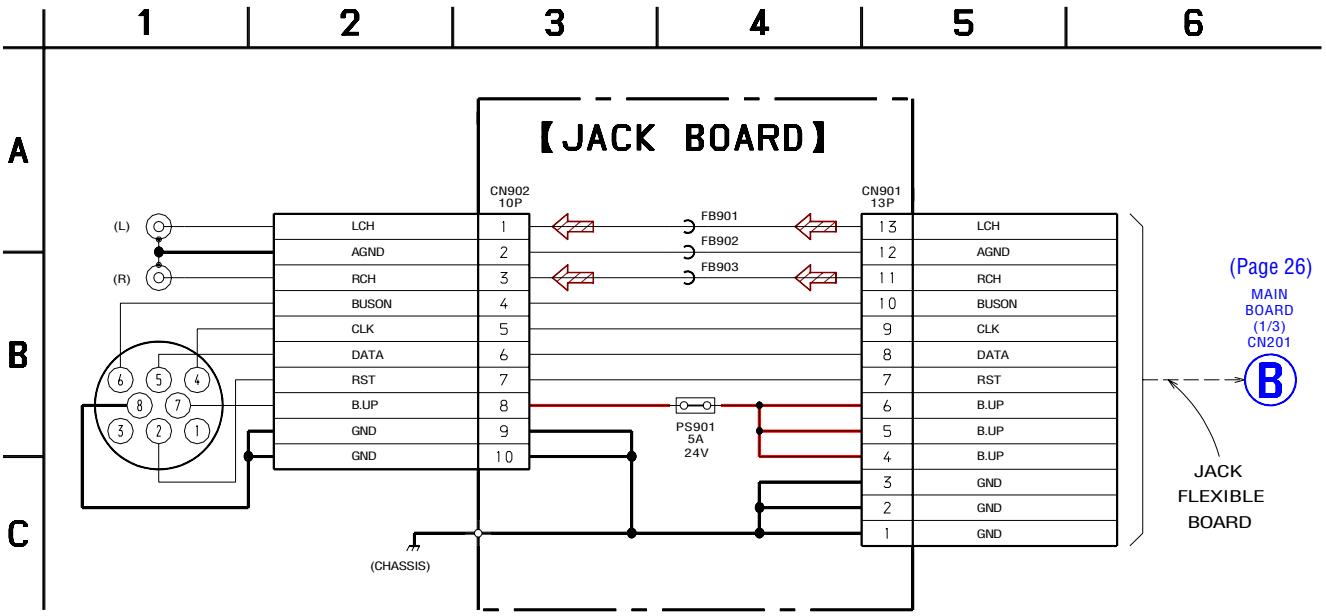
⓫ IC401 ⑨④ (XTAO)



5-12. PRINTED WIRING BOARDS – JACK Board –

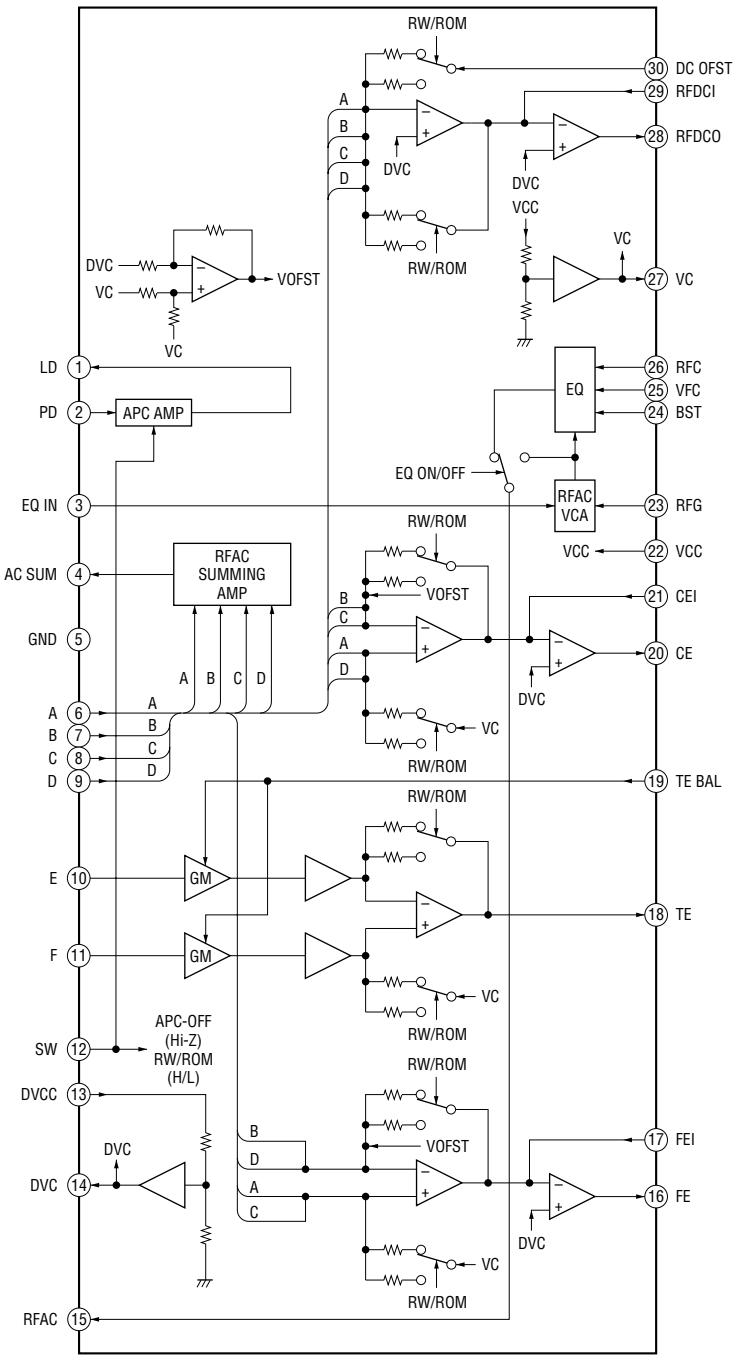


5-13. SCHEMATIC DIAGRAM – JACK Board –

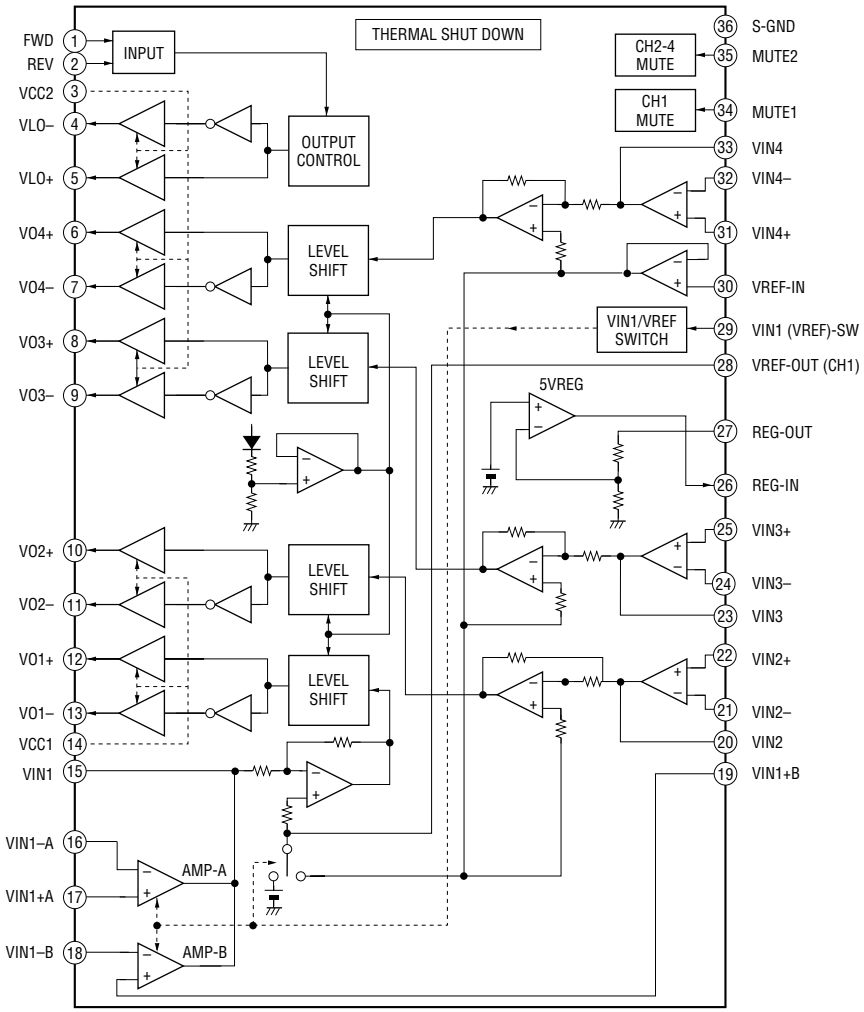


• **IC Block Diagrams**
– RF Board –

IC101 CXA2581N-T4

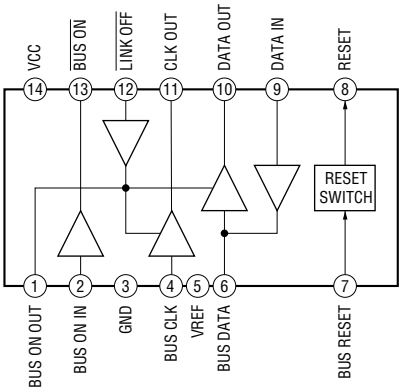


IC201 LA6576L-TE-L

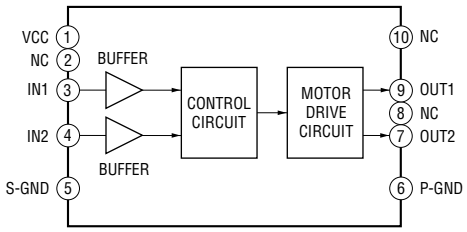


– MAIN Board –

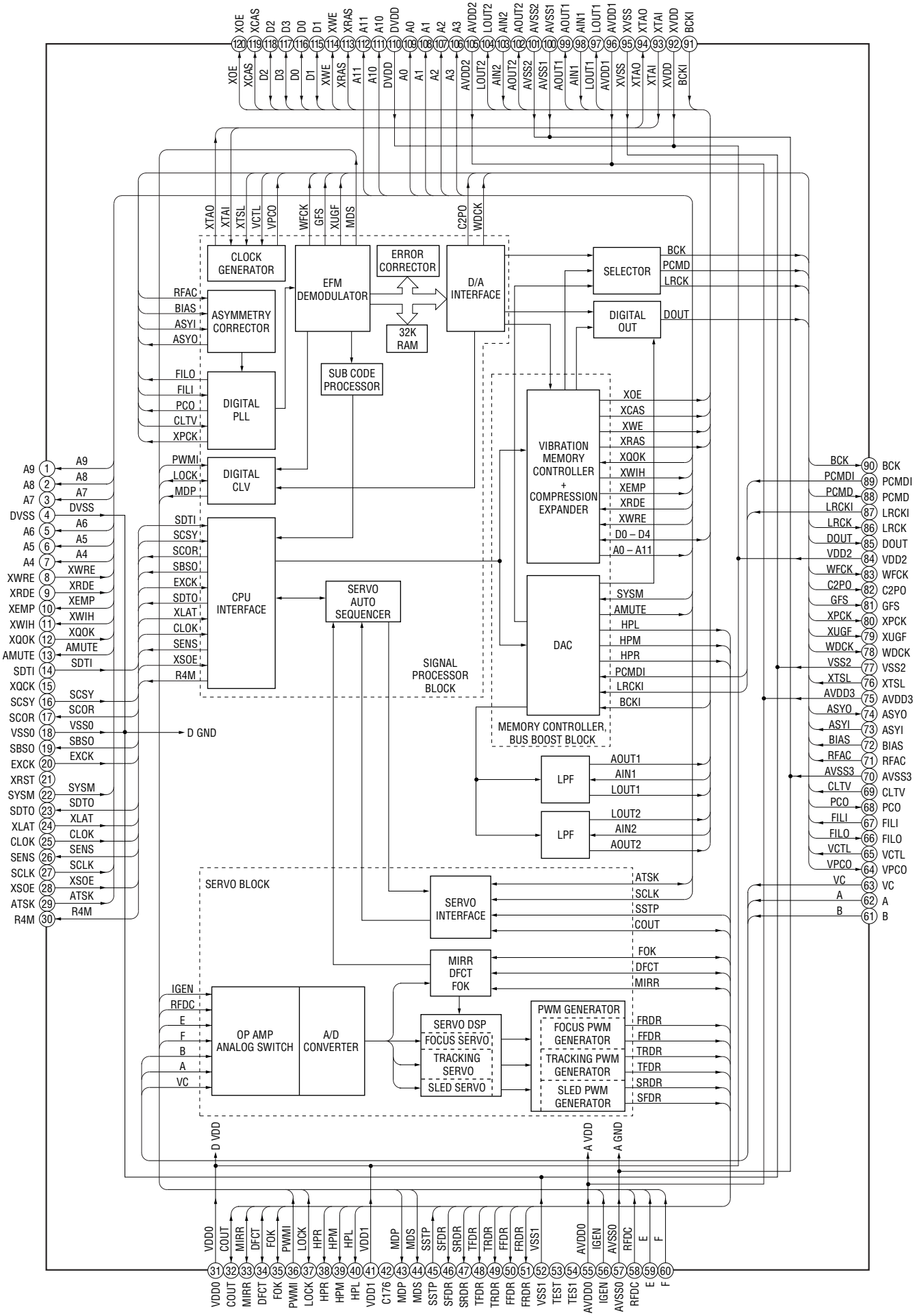
IC201 BA8272AFV-E2



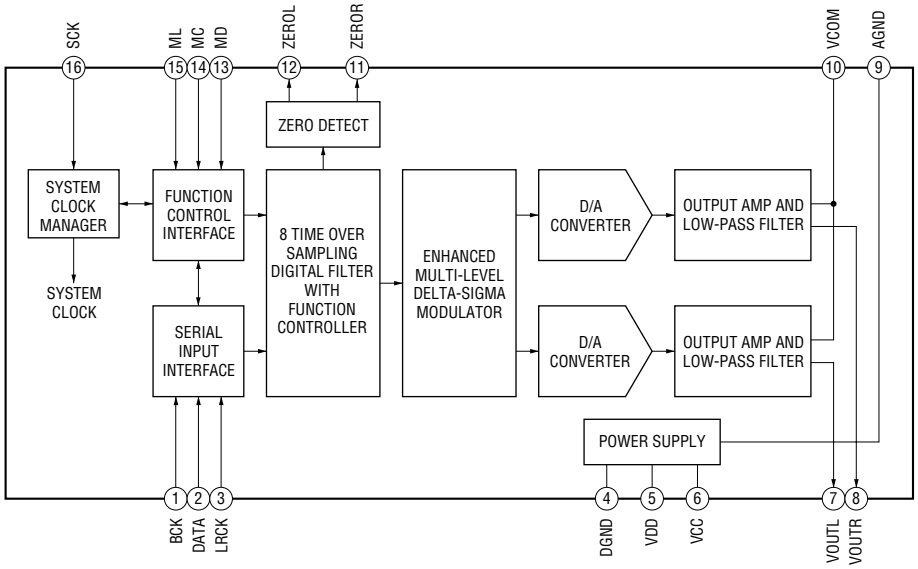
IC302 LB1930M-TLM



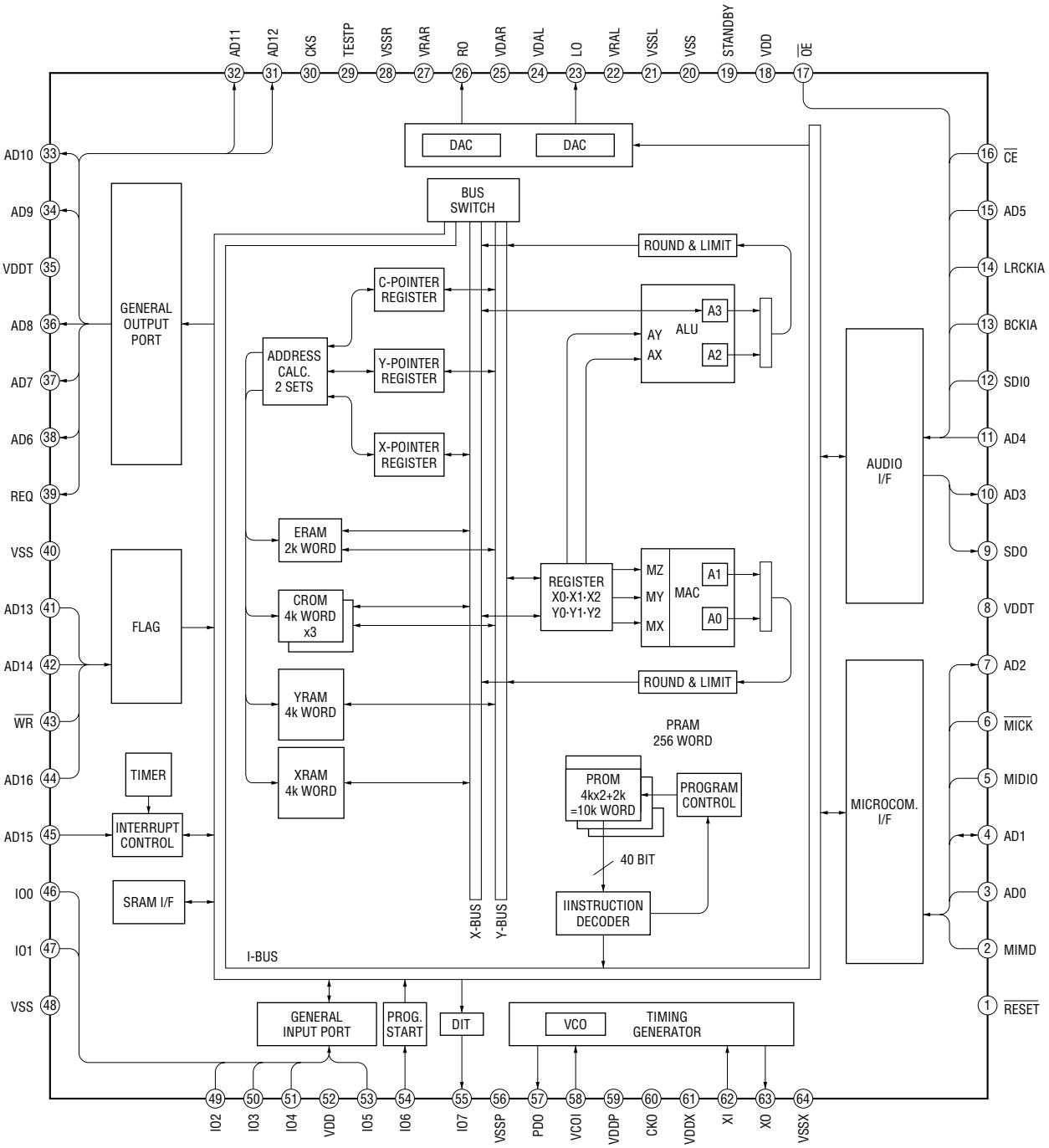
IC401 CXD3027R



IC501 PCM1748E/2K



IC601 CXD9684R-004



5-14. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC301 HD6432238RWN22TEIV (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	TEST	I	Test mode setting terminal "L": test mode Not used
2	DECXRST	O	Reset signal output to the CD-ROM/MP3 decoder "L": reset
3	DECSTBY	O	Standby mode control signal output to the CD-ROM/MP3 decoder "H": standby
4	FOK	I	Focus OK signal input from the DSP "L": NG, "H": OK
5	GFS	I	Guard frame sync signal input from the DSP "L": NG, "H": OK
6	SCLK	O	Serial data reading clock signal output to the DSP
7	SENS	I	Internal status signal (sense signal) input from the DSP
8	CDCLK	O	Serial data transfer clock signal output to the DSP
9	CDLAT	O	Serial data latch pulse signal output to the DSP
10	CDDAT	O	Serial data output to the DSP
11	XRST	O	System reset signal output to the DSP "L": reset
12	CVCC	—	Power supply terminal (+3.3V) (for system)
13	NC	O	Not used
14	VSS	—	Ground terminal
15	XQOK	O	Subcode Q OK pulse signal output to the DSP
16	XRDE	O	Read enable signal output to the DSP
17	XWRE	O	Write enable signal output to the DSP
18	DAC-DATA	O	Mode control data output to the D/A converter
19	DAC-CLK	O	Mode control data transfer clock signal output to the D/A converter
20	DAC-LAT	O	Mode control data latch pulse signal output to the D/A converter
21	ESPSEL	I	ESP mode setting terminal "L": ESP on (fixed at "L" in this set)
22	TEXTSEL	I	CD text mode setting terminal "L": CD text on (fixed at "L" in this set)
23	CFSEL	I	Custom file on/off setting terminal "L": custom file on (fixed at "L" in this set)
24	DOUT SEL	I	Input terminal for digital out on/off setting "L": digital out on Not used
25	MAG-SW	I	Magazine detect switch input terminal "L": magazine in
26	MUTE	O	Audio line muting on/off control signal output "H": muting on
27, 28	NC	O	Not used
29	CDON	O	D/A convert and servo sections power supply on/off control signal output "H": power on
30	EVON	O	Mechanism deck section power supply on/off control signal output "H": power on
31	PCTX	O	PC connecting output terminal for UART
32	PCRX	I	PC connecting input terminal for UART
33 to 35	NC	O	Not used
36	ELVF	O	Motor drive signal (elevator up direction) output to the elevator motor drive
37	ELVR	O	Motor drive signal (elevator down direction) output to the elevator motor drive
38	SCOR	I	Subcode sync (S0+S1) detection signal input from the DSP
39	NC	O	Not used
40	GRSCOR	I	Subcode sync (S0+S1) detection signal input from the DSP
41	NC	O	Not used
42	AVSS	—	Ground terminal (for A/D converter)
43 to 49	NCI	I	Not used
50	EHS	I	Elevator height position detection signal input from the elevator height sensor (A/D input)
51	NCI	I	Not used
52	MCK	I	Input of detection signal for the fine adjustment (elevator height (address) adjustment) of elevator height position (A/D input)
53	VREF	I	Reference voltage (+3.3V) input terminal (for A/D converter)

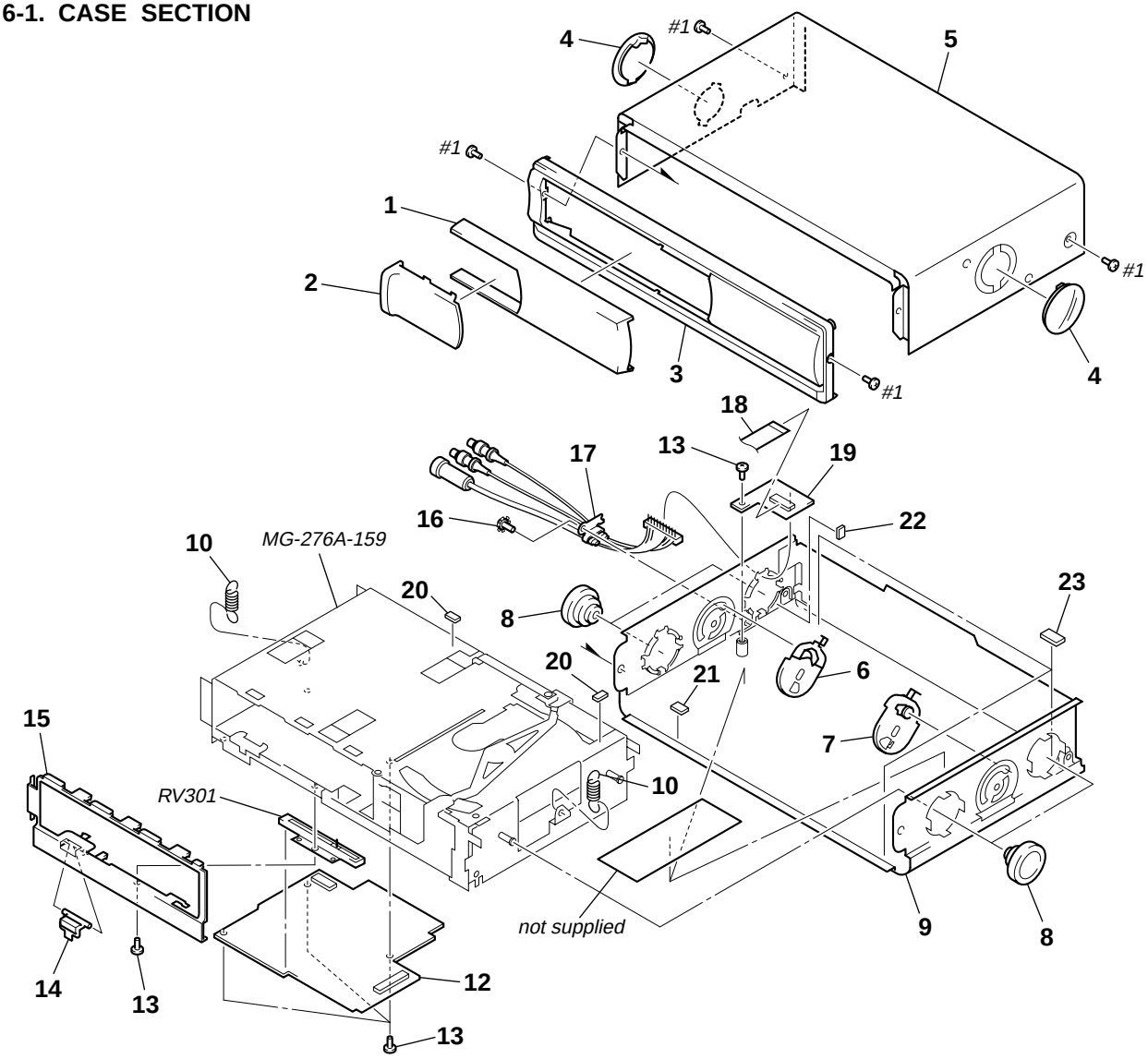
Pin No.	Pin Name	I/O	Description
54	AVCC	—	Power supply terminal (+3.3V) (for A/D converter)
55, 56	MD0, MD1	I	Setting terminal for the CPU operational mode "H": single chip mode (fixed at "H" in this set)
57	OSC2	O	Sub system clock output terminal Not used
58	OSC1	I	Sub system clock input terminal Not used (fixed at "L")
59	$\overline{\text{RES}}$	I	System reset signal input from the SONY bus interface and reset signal generator "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
60	NMI	O	Not used (fixed at "H")
61	STBY	O	Standby mode control signal output terminal Not used (fixed at "H")
62	VCC	—	Power supply terminal (+3.3V)
63	XTAL	I	Main system clock input terminal (12.288 MHz)
64	VSS	—	Ground terminal
65	EXTAL	O	Main system clock output terminal (12.288 MHz)
66	FWE	I	Flash memory data write enable signal input terminal
67	MD2	I	Setting terminal for the CPU operational mode "H": single chip mode (fixed at "H" in this set)
68	FL BOOT	I	Flash memory data write control signal input terminal "L" active
69	FL W	O	Flash memory data write control signal output (connecting FWE (pin 66))
70, 71	NC	O	Not used
72	MGLK-SW	I	Magazine in/out detect switch input terminal "L": magazine in
73	DECINT	I	Interrupt signal input from the CD-ROM/MP3 decoder
74	NC	O	Not used
75	EJECT	I	Eject switch input terminal "L" active
76	SO	O	Serial data output to the SONY bus interface
77	SI	I	Serial data input from the SONY bus interface
78	SCLK	I	Serial data transfer clock signal input from the SONY bus interface
79	EEDATA	I/O	Two-way data bus with the EEPROM
80	SDA	I/O	I2C interface data input/output with the CD-ROM/MP3 decoder
81	SCL	O	I2C interface data transfer clock signal output to the CD-ROM/MP3 decoder
82	EECLK	O	Serial data transfer clock signal output to the EEPROM
83	NC	O	Not used
84	SQSO	I	Subcode Q data input from the DSP
85	SQCK	O	Subcode Q data reading clock signal output to the DSP
86 to 89	NC	O	Not used
90	R/RW SEL	O	CD-ROM/RW selection signal output "L": CD-RW, "H": CD-ROM
91	BUSON	I	Bus on/off control signal input from the SONY bus interface "L": bus on
92	BUCHK	I	Battery detection signal input "H": low battery (Normally: "L")
93, 94	NC	O	Not used
95	LOADF	O	Motor drive signal (load chucking direction) output to the chucking motor drive
96	LOADR	O	Motor drive signal (save direction) output to the chucking motor drive
97	$\overline{\text{SINGLE}}$	I	Setting terminal for the single disc/multiple discs mode "L": single disc mode, "H": multiple discs mode (fixed at "H" in this set)
98	$\overline{\text{LOAD SW}}$	I	Chucking end detect switch input terminal "L": When completion of the disc chucking, loading or save operation
99	$\overline{\text{SAVE SW}}$	I	Chucking end detect switch input terminal "L": When completion of the disc chucking, loading or save operation
100	$\overline{\text{LIM SW}}$	I	Sled limit in detect switch input terminal "L": When the optical pick-up is inner position

SECTION 6
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

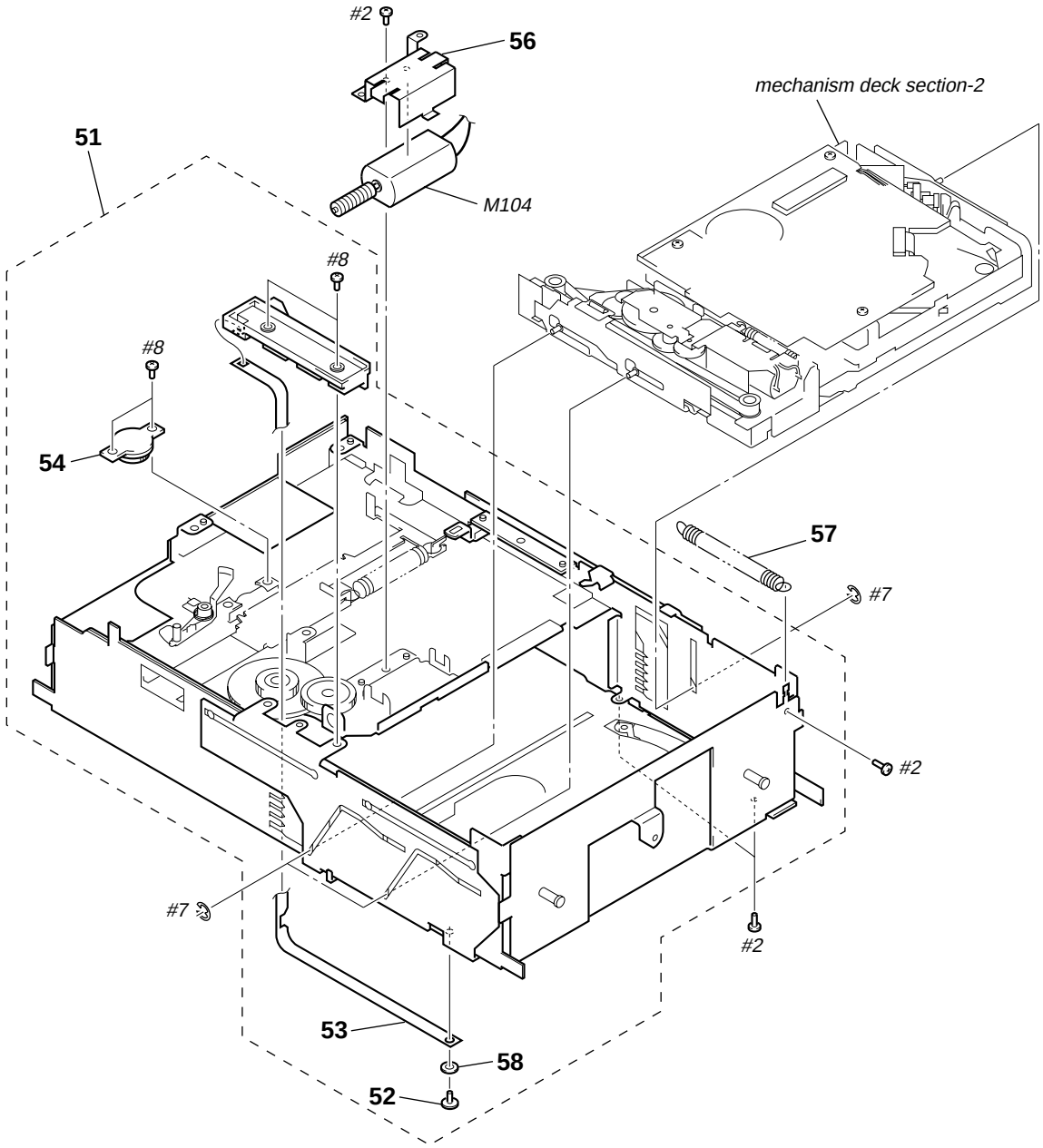
6-1. CASE SECTION



Ref. No.	Part No.	Description	Remark
1	3-225-801-51	DOOR (S)	
2	3-225-802-21	BUCKLE (S)	
3	X-3381-750-1	PANEL ASSY, F/P	
4	3-047-886-11	LEVER (FLT. 838)	
5	3-225-798-21	CASE (UPPER S)	
6	X-3379-931-2	ARM (FL. S) ASSY	
7	X-3379-932-2	ARM (FR. S) ASSY	
8	3-225-807-01	DAMPER (S)	
9	X-3381-748-1	CASE (LOWER S) ASSY	
10	3-225-808-02	SPRING (FLT. S)	
12	A-3340-378-A	MAIN BOARD, COMPLETE	
13	3-935-636-11	SCREW (FP)	
14	3-225-810-02	BUTTON (S) (EJECT)	

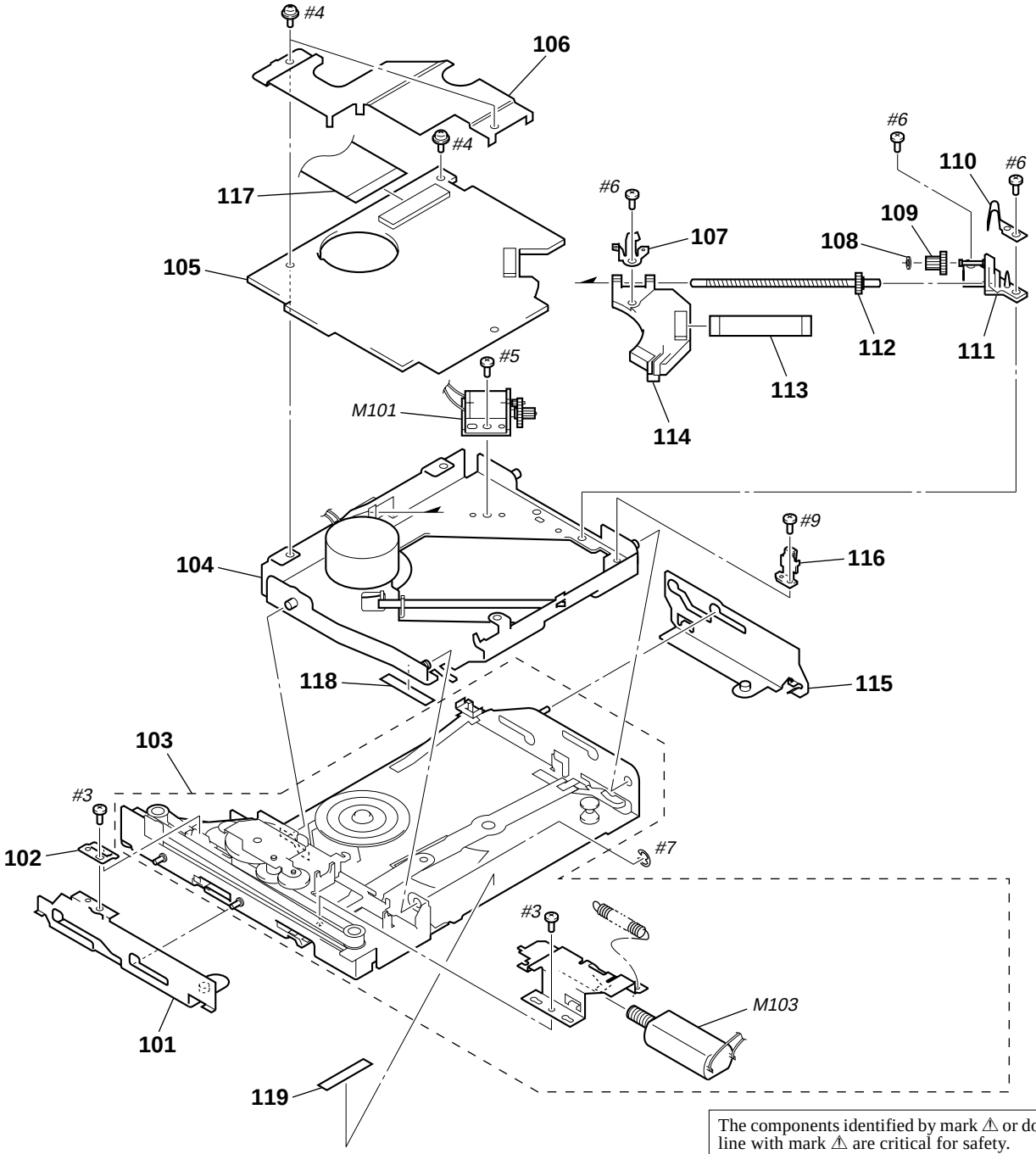
Ref. No.	Part No.	Description	Remark
15	3-225-805-01	ESCUTCHEON (S)	
16	3-376-464-11	SCREW (+PTT 2.6X6), GROUND POINT	
17	1-757-747-11	CORD (WITH CONNECTOR) (BUS/RCA)	
18	1-680-823-11	JACK FLEXIBLE BOARD	
19	1-683-528-11	JACK BOARD	
20	3-233-246-01	CUSHION (CHASSIS 6T)	
21	3-348-750-01	CUSHION (DAMPER)	
22	3-233-248-01	CUSHION (JACK)	
23	3-233-245-01	SPACER (CASE LOWER)	
RV301	1-227-137-11	RES, VAR, SLIDE 10K (ELEVATOR HEIGHT SENSOR)	
#1	7-685-792-09	SCREW +PTT 2.6X6 (S)	

6-2. MECHANISM DECK SECTION-1 (MG-276A-159)



Ref. No.	Part No.	Description	Remark
51	A-3315-334-D	CHASSIS ASSY, MAIN	
52	3-048-814-01	SCREW (M1.7X2.2)	
53	3-227-131-01	BELT (TS)	
54	3-973-975-11	DAMPER, OIL	
56	3-227-133-01	BRACKET (MDM)	
57	3-227-150-01	SPRING, TENSION	
58	3-701-440-21	WASHER, 3.5	
M104	A-3315-337-A	MOTOR ASSY, MD (ELEVATOR)	
#2	7-685-780-09	SCREW +PTT 2X3 (S)	
#7	7-624-104-04	STOP RING 2.0, TYPE-E	
#8	7-685-851-09	SCREW, +BVTT 2X4 (S)	

6-3. MECHANISM DECK SECTION-2 (MG-276A-159)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	X-3380-094-1	LEVER (CHK. R) ASSY	
102	3-227-173-01	JOINT (CHK)	
103	A-3315-331-H	CHASSIS (EV) ASSY	
104	X-3380-644-2	SERVICE ASSY, OP CHASSIS BLOCK	
105	A-3326-966-A	RF BOARD, COMPLETE	
106	3-230-917-01	HEAT SINK	
107	3-227-117-01	SPRING (SLED), DETENT	
108	3-318-136-01	WASHER, POLYETHYLENE, DIA. 1.2	
109	3-227-120-01	GEAR (SL2)	
110	3-227-118-01	SPRING (SLED FRONT POINT)	
111	X-3380-098-2	BEARING (SLED) ASSY	
112	A-3315-327-A	SHAFT (SLED FEED) ASSY	
113	1-680-824-12	OP FLEXIBLE BOARD	
⚠114	8-820-103-11	OPTICAL PICK-UP KSS-720A/C-RP	
115	X-3380-093-1	LEVER (CHK. L) ASSY	
116	3-231-650-01	SPRING (FOP), LEAF	
117	1-680-822-11	MAIN FLEXIBLE BOARD	
118	3-233-757-01	SPACER (TRAY RETAINER)	
119	3-010-230-02	SPACER (DISC RETAINER L)	
M101	A-3307-854-A	MOTOR COMPLETE ASSY, SLED	
M103	A-3315-325-B	MOTOR ASSY, LE (CHUCKING)	
#3	7-627-552-88	SCREW, PRECISION +P 1.7X2.2	
#4	7-628-253-00	SCREW +PS 2X4	
#5	7-627-554-07	SCREW, PRECISION +P 2X2.2	
#6	7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3	
#7	7-624-104-04	STOP RING 2.0, TYPE-E	
#9	7-627-554-38	SCREW, PRECISION +P 2X1.8 TYPE 1	

SECTION 7
ELECTRICAL PARTS LIST

JACK | MAIN

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . µPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	1-683-528-11	JACK BOARD			
		**********			
		< CONNECTOR >			
CN901	1-770-350-21	CONNECTOR, FPC 13P			
		< FERRITE BEAD >			
FB901	1-414-760-21	FERRITE			
FB902	1-414-760-21	FERRITE			
FB903	1-414-760-21	FERRITE			
		< FUSE >			
PS901	1-576-592-21	FUSE (SMD)	5A	24V	
**********					
	A-3340-378-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C201	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C202	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C203	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C204	1-115-466-00	ELECT	1000uF	20%	16V
C205	1-126-382-11	ELECT	100uF	20%	16V
C206	1-126-382-11	ELECT	100uF	20%	16V
C207	1-126-382-11	ELECT	100uF	20%	16V
C208	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C209	1-128-110-11	ELECT	470uF	20%	6.3V
C210	1-125-710-11	DOUBLE LAYER	0.1F		5.5V
C211	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C212	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C213	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C214	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C215	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C216	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C217	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C218	1-126-916-11	ELECT	1000uF	20%	6.3V
C219	1-128-110-11	ELECT	470uF	20%	6.3V
C301	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C302	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C303	1-126-791-11	ELECT	10uF	20%	16V
C304	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C305	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C306	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C307	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C308	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C309	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C310	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C401	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C402	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C403	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C404	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C405	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C406	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C407	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C408	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C409	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C410	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C412	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C413	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C414	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C415	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C416	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C417	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C418	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C419	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C420	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C421	1-127-491-00	ELECT (SOLID)	22uF	20%	10V
C501	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C502	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C504	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C505	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C506	1-126-382-11	ELECT	100uF	20%	16V
C508	1-126-791-11	ELECT	10uF	20%	16V
C509	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C510	1-126-791-11	ELECT	10uF	20%	16V
C511	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C512	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C513	1-126-382-11	ELECT	100uF	20%	16V
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C516	1-126-791-11	ELECT	10uF	20%	16V
C601	1-126-791-11	ELECT	10uF	20%	16V
C602	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C603	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C604	1-164-156-11	CERAMIC CHIP	0.1uF		25V

MAIN

Ref. No.	Part No.	Description			Remark
C605	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C606	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C607	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C608	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C609	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C613	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C615	1-164-156-11	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN201	1-770-350-21	CONNECTOR, FPC 13P			
CN202	1-793-820-21	CONNECTOR, FPC 22P			
		< DIODE >			
D201	8-719-056-93	DIODE	MM3Z18VST1		
D202	8-719-056-93	DIODE	MM3Z18VST1		
D204	6-500-054-01	DIODE	RB481YT2R		
D207	8-719-976-99	DIODE	MM3Z5V1ST1		
D210	8-719-056-83	DIODE	MM3Z6V8ST1		
D301	8-719-050-38	DIODE	M1MA152WK-T1		
D501	8-719-976-99	DIODE	MM3Z5V1ST1		
D502	8-719-976-99	DIODE	MM3Z5V1ST1		
		< FERRITE BEAD >			
FB501	1-414-760-21	FERRITE			
		< IC >			
IC201	8-759-829-46	IC	BA8272AFV-E2		
IC202	6-702-147-01	IC	NJM2396F08		
IC203	6-702-146-01	IC	NJM2396F05		
IC204	6-702-148-01	IC	XC61CN2702NR		
IC205	8-759-444-93	IC	RH5RL33AA-T1		
IC301	6-801-497-01	IC	HD6432238ARWN22TEIV		
IC302	8-759-527-33	IC	LB1930M-TLM		
IC303	8-759-660-38	IC	BR24C16FJ-E2		
IC401	8-752-398-18	IC	CXD3027R		
IC402	8-759-538-44	IC	MSM51V17400D-10TK-FS		
IC501	8-759-825-13	IC	PCM1748E/2K		
IC502	8-759-662-11	IC	TLV2362IPWR		
IC601	6-700-297-01	IC	CXD9684R-004		
IC602	6-700-296-01	IC	W24L010AT-12-EL15		
IC603	8-759-645-31	IC	RN5RZ25BA-TL		
IC604	8-759-196-96	IC	TC7SH08FU-TE85R		
		< TRANSISTOR >			
Q201	8-729-922-47	TRANSISTOR	2SB1184-TLR		
Q202	8-729-424-08	TRANSISTOR	MUN2111T1		
Q203	8-729-010-25	TRANSISTOR	MSD601-RT1		
Q205	8-729-010-25	TRANSISTOR	MSD601-RT1		
Q302	8-729-421-22	TRANSISTOR	MUN2211T1		
Q501	8-729-424-08	TRANSISTOR	MUN2111T1		
Q502	8-729-043-69	TRANSISTOR	UN2225-(TX).S0		
Q503	8-729-043-69	TRANSISTOR	UN2225-(TX).S0		

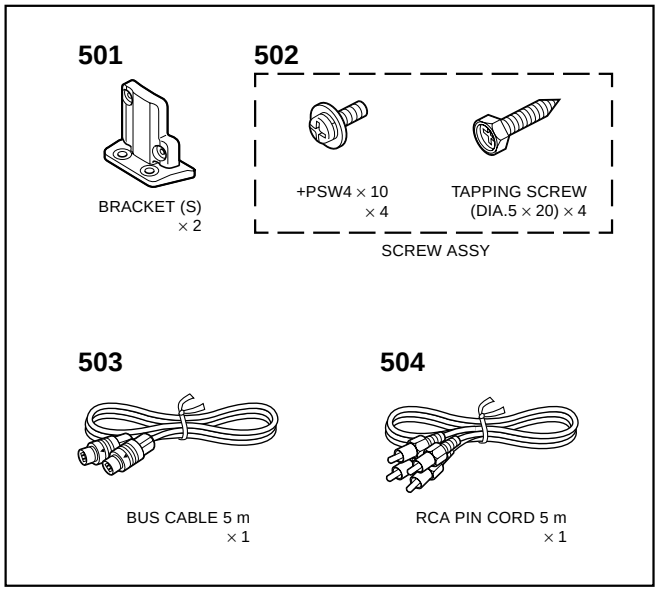
Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R201	1-216-841-11	METAL CHIP	47K	5%	1/10W
R202	1-218-739-11	RES-CHIP	91K	5%	1/10W
R204	1-216-838-11	METAL CHIP	27K	5%	1/10W
R205	1-216-841-11	METAL CHIP	47K	5%	1/10W
R206	1-216-845-11	METAL CHIP	100K	5%	1/10W
R207	1-216-853-11	METAL CHIP	470K	5%	1/10W
R209	1-216-857-11	METAL CHIP	1M	5%	1/10W
R210	1-216-841-11	METAL CHIP	47K	5%	1/10W
R211	1-216-845-11	METAL CHIP	100K	5%	1/10W
R301	1-216-821-11	METAL CHIP	1K	5%	1/10W
R302	1-216-845-11	METAL CHIP	100K	5%	1/10W
R303	1-216-821-11	METAL CHIP	1K	5%	1/10W
R304	1-216-821-11	METAL CHIP	1K	5%	1/10W
R305	1-216-845-11	METAL CHIP	100K	5%	1/10W
R306	1-216-833-11	METAL CHIP	10K	5%	1/10W
R307	1-216-821-11	METAL CHIP	1K	5%	1/10W
R308	1-216-845-11	METAL CHIP	100K	5%	1/10W
R309	1-216-845-11	METAL CHIP	100K	5%	1/10W
R310	1-216-845-11	METAL CHIP	100K	5%	1/10W
R401	1-216-839-11	METAL CHIP	33K	5%	1/10W
R402	1-216-839-11	METAL CHIP	33K	5%	1/10W
R403	1-216-845-11	METAL CHIP	100K	5%	1/10W
R404	1-216-839-11	METAL CHIP	33K	5%	1/10W
R405	1-216-853-11	METAL CHIP	470K	5%	1/10W
R406	1-216-857-11	METAL CHIP	1M	5%	1/10W
R407	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R408	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R409	1-216-833-11	METAL CHIP	10K	5%	1/10W
R410	1-216-857-11	METAL CHIP	1M	5%	1/10W
R411	1-216-845-11	METAL CHIP	100K	5%	1/10W
R412	1-216-833-11	METAL CHIP	10K	5%	1/10W
R413	1-216-845-11	METAL CHIP	100K	5%	1/10W
R416	1-216-864-11	METAL CHIP	0	5%	1/10W
R417	1-216-864-11	METAL CHIP	0	5%	1/10W
R418	1-216-864-11	METAL CHIP	0	5%	1/10W
R419	1-216-821-11	METAL CHIP	1K	5%	1/10W
R501	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R502	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R503	1-216-809-11	METAL CHIP	100	5%	1/10W
R504	1-216-809-11	METAL CHIP	100	5%	1/10W
R505	1-216-845-11	METAL CHIP	100K	5%	1/10W
R506	1-216-845-11	METAL CHIP	100K	5%	1/10W
R507	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R508	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R509	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R510	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R511	1-216-819-11	METAL CHIP	680	5%	1/10W
R512	1-216-819-11	METAL CHIP	680	5%	1/10W
R514	1-216-813-11	METAL CHIP	220	5%	1/10W
R515	1-216-809-11	METAL CHIP	100	5%	1/10W
R516	1-216-809-11	METAL CHIP	100	5%	1/10W
R517	1-216-809-11	METAL CHIP	100	5%	1/10W
R518	1-216-815-11	METAL CHIP	330	5%	1/10W
R601	1-216-821-11	METAL CHIP	1K	5%	1/10W
R602	1-216-809-11	METAL CHIP	100	5%	1/10W
R603	1-216-864-11	METAL CHIP	0	5%	1/10W

MAIN RF

Ref. No.	Part No.	Description			Remark
R604	1-216-845-11	METAL CHIP	100K	5%	1/10W
R615	1-216-814-11	METAL CHIP	270	5%	1/10W
R616	1-216-814-11	METAL CHIP	270	5%	1/10W
R618	1-216-857-11	METAL CHIP	1M	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB601	1-233-810-21	RES, NETWORK	100K (3216)		
RB602	1-233-810-21	RES, NETWORK	100K (3216)		
RB603	1-233-810-21	RES, NETWORK	100K (3216)		
RB604	1-233-810-21	RES, NETWORK	100K (3216)		
		< VARIABLE RESISTOR >			
RV302	1-223-834-11	RES, ADJ, CARBON	47K		
		< SWITCH >			
SW301	1-771-540-11	SWITCH, PUSH (1 KEY) (MAGAZINE DETECT)			
SW302	1-529-566-31	SWITCH, PUSH (1 KEY) (MAGAZINE IN/OUT DETECT)			
SW303	1-692-431-21	SWITCH, TACTILE (⏏)			
		< VIBRATOR >			
X301	1-767-133-21	VIBRATOR, CERAMIC (12.288MHz)			
X501	1-795-577-21	VIBRATOR, CERAMIC (16.9344MHz)			
**********					
	A-3326-966-A	RF BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C107	1-126-209-11	ELECT CHIP	100uF	20%	4V
C108	1-126-209-11	ELECT CHIP	100uF	20%	4V
C109	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C110	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C111	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C112	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C113	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C114	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C115	1-126-209-11	ELECT CHIP	100uF	20%	4V
C116	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C117	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C119	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C201	1-107-778-11	ELECT CHIP	470uF	20%	16V
C202	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C203	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C204	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C205	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C206	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C208	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C209	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C211	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C217	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C220	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
CN101	1-793-820-21	CONNECTOR, FPC 22P			
CN102	1-815-016-21	CONNECTOR, FFC/FPC (ZIF) 16P			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC101	8-752-089-74	IC CXA2581N-T4			
IC201	8-759-832-99	IC LA6576L-TE-L			
		< TRANSISTOR >			
Q101	8-729-026-49	TRANSISTOR	2SA1037AK-T146-R		
Q102	8-729-901-00	TRANSISTOR	DTC124EKA-T146		
		< RESISTOR >			
R103	1-216-801-11	METAL CHIP	22	5%	1/10W
R106	1-216-845-11	METAL CHIP	100K	5%	1/10W
R109	1-216-845-11	METAL CHIP	100K	5%	1/10W
R110	1-216-836-11	METAL CHIP	18K	5%	1/10W
R111	1-216-833-11	METAL CHIP	10K	5%	1/10W
R112	1-216-833-11	METAL CHIP	10K	5%	1/10W
R113	1-216-834-11	METAL CHIP	12K	5%	1/10W
R114	1-216-833-11	METAL CHIP	10K	5%	1/10W
R115	1-216-835-11	METAL CHIP	15K	5%	1/10W
R116	1-216-845-11	METAL CHIP	100K	5%	1/10W
R117	1-218-859-11	METAL CHIP	3.3K	0.5%	1/10W
R118	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R119	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R120	1-216-837-11	METAL CHIP	22K	5%	1/10W
R121	1-216-837-11	METAL CHIP	22K	5%	1/10W
R127	1-216-801-11	METAL CHIP	22	5%	1/10W
R128	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R201	1-216-833-11	METAL CHIP	10K	5%	1/10W
R202	1-216-833-11	METAL CHIP	10K	5%	1/10W
R203	1-216-833-11	METAL CHIP	10K	5%	1/10W
R204	1-216-839-11	METAL CHIP	33K	5%	1/10W
R205	1-216-833-11	METAL CHIP	10K	5%	1/10W
R206	1-216-839-11	METAL CHIP	33K	5%	1/10W
R207	1-216-833-11	METAL CHIP	10K	5%	1/10W
R208	1-216-839-11	METAL CHIP	33K	5%	1/10W
R209	1-216-833-11	METAL CHIP	10K	5%	1/10W
R210	1-216-839-11	METAL CHIP	33K	5%	1/10W
R211	1-216-841-11	METAL CHIP	47K	5%	1/10W
R212	1-216-843-11	METAL CHIP	68K	5%	1/10W
R213	1-216-841-11	METAL CHIP	47K	5%	1/10W
R214	1-216-842-11	METAL CHIP	56K	5%	1/10W
R215	1-216-833-11	METAL CHIP	10K	5%	1/10W
R216	1-216-839-11	METAL CHIP	33K	5%	1/10W
R218	1-216-833-11	METAL CHIP	10K	5%	1/10W
R219	1-216-839-11	METAL CHIP	33K	5%	1/10W
R220	1-216-834-11	METAL CHIP	12K	5%	1/10W
R222	1-216-821-11	METAL CHIP	1K	5%	1/10W
R223	1-216-820-11	METAL CHIP	820	5%	1/10W
		< SWITCH >			
SW101	1-571-754-31	SWITCH, PUSH (1 KEY) (LIMIT)			
SW102	1-786-149-21	SWITCH, PUSH (1 KEY) (CHUCKING END DETECT)			
**********					

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
17	1-757-747-11	CORD (WITH CONNECTOR) (BUS/RCA)	
18	1-680-823-11	JACK FLEXIBLE BOARD	
113	1-680-824-12	OP FLEXIBLE BOARD	
⚠114	8-820-103-11	OPTICAL PICK-UP KSS-720A/C-RP	
117	1-680-822-11	MAIN FLEXIBLE BOARD	
M101	A-3307-854-A	MOTOR COMPLETE ASSY, SLED	
M103	A-3315-325-B	MOTOR ASSY, LE (CHUCKING)	
M104	A-3315-337-A	MOTOR ASSY, MD (ELEVATOR)	
RV301	1-227-137-11	RES, VAR, SLIDE 10K (ELEVATOR HEIGHT SENSOR)	
**********			
		ACCESSORIES	
		**********	
	3-241-425-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, TRADITIONAL CHINESE)	
	3-241-425-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, DUTCH, ITALIAN)	
	3-241-425-31	MANUAL, INSTRUCTION (SPANISH, SWEDISH, PORTUGUESE, POLISH, RUSSIAN, GREEK)	
	A-3315-410-B	MAGAZINE (276) ASSY	
**********			
		PARTS FOR INSTALLATION AND CONNECTIONS	
		**********	
501	3-225-809-11	BRACKET (S)	
* 502	X-3369-824-1	SCREW ASSY	
503	1-590-519-21	CORD (WITH CONNECTOR) (BUS CABLE)	
504	1-590-874-11	CORD, CONNECTION (RCA PIN CORD)	



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2002.03	New
1.1	2004.03	Correction of Part No. for Ref. No. 19 to EXPLODED VIEWS (SPM-04002)